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The New England JOURNAL of MEDICINE

FORMERLY THE BOSTON MEDICAL AND SURGICAL JOURNAL

OFFICIAL ORGAN OF
THE MASSACHUSETTS MEDICAL SOCIETY
THE NEW HAMPSHIRE MEDICAL SOCIETY—THE VERMONT STATE MEDICAL SOCIETY
THE NEW ENGLAND SURGICAL SOCIETY—THE BOSTON SURGICAL SOCIETY, INC.
THE NEW ENGLAND PEDIATRIC SOCIETY AND
THE NEW HAMPSHIRE SURGICAL CLUB

OWNED AND PUBLISHED BY THE MASSACHUSETTS MEDICAL SOCIETY

Volume 198, Number 2
$6 per Annum, 25c per Copy

MARCH 1, 1928

Published Weekly in Boston
at 126 Massachusetts Avenue

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W. B. SAUNDERS COMPANY — **Philadelphia and London**

Entered at the Postoffice at Boston as Second Class Matter

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The New England
Journal of Medicine

VOLUME 198 MARCH 1, 1928 NUMBER 2

NEW ENGLAND SURGICAL SOCIETY

FRACTURES OF THE ODONTOID PROCESS

BY ROBERT B. OSGOOD, M.D., F.A.C.S., AND CHARLES C. LUND, M.D.

WE ask your consideration of fractures of the odontoid process for three reasons.

First, because the rarity of their occurrence is in inverse ratio to the gravity of their symptoms. In Jefferson's series of 13 cases, 8 died as an immediate or delayed result of the fracture, 4 died from associated conditions, and only one doubtful case recovered.

Second, because an early recognition of the lesion may save life and make possible the pursuit of happiness. The methods of immediate treatment are definite, and late treatment is not without hope.

Third, because one of the writers will report his own case and demonstrate his fortunate end-result.

We shall first summarize the literature under leadings of Occurrence, Causation, Complications, Outcome, and Treatment. We shall then discuss signs and symptoms and describe the methods of treatment which we have found efficient in the early and late cases, concluding with the personal report of a personal case.

REVIEW OF LITERATURE

Occurrence

A fairly painstaking review of the literature of fractures of the odontoid process of the axis has discovered about 55 reported cases and, adding our new case, making a total of 56. Forty of these were analyzed by Frisch[7] in 1912. Jefferson[11], studying fractures of the atlas, found 13 cases of fractures of the odontoid as a complicating injury. Hartwell[10], reviewing 133 cases of fracture of the spine at the Massachusetts General Hospital from 1900-1914, encountered one odontoid fracture, and in Osgood's (unpublished) series of 222 fractures of the spine found in the records of the Boston City Hospital and the Massachusetts General Hospital from 1915-1925, there were 2 cases of fractured odontoid.

Causation and Mechanism

In 60 per cent. of the reported cases the patients sustained falls, striking upon the head.

In 20 per cent. they were struck by heavy objects.

In 20 per cent. the cause is not stated. One case seems to have been definitely due to a chiropractic "adjustment[1]."

Wüsthoff[19], after an anatomic and postmortem study, makes certain pertinent points as to the probable mechanism of the fracture.

1. The weakest and most vulnerable portion of the odontoid is its base near its point of junction with the body of the axis.
2. The odontoid process is stronger than the rudimentary body of the atlas.
3. The odontoid process is weaker than the combined strength of the articular and check ligaments.
4. Sometimes the check ligament holds and the odontoid fractures. At other times the check ligament ruptures and the atlas dislocates forwards.
5. Blows on the back of the head with hyperflexion commonly produce a forward dislocation of the atlas, but if the check ligament holds may fracture the odontoid at its base as well.
6. Blows on the forehead with hyperextension may produce a backward dislocation and a fracture of the odontoid, but are more likely to fracture the slender posterior arch of the atlas as its rudimentary spinous process impinges on the heavy spinous process of the axis.
7. Blows on one side of the head with extreme rotation are more likely to cause the relatively frequent rotary dislocations of the atlas on the axis.

Complications

The common complications of fractured odontoid are lesions of the atlas and associated with most odontoid injuries is a forward dislocation of the atlas of greater or less degree. In literature we have found only one case in which it was definitely stated that the main atlo axoid articulations were intact. In fractures of the odontoid associated with dislocation of the atlas there is usually a very definite displacement of the loose fragment of the odontoid. Nerve root and cord pressure complications are very common and often cause death.

Outcome

Only 13 of Frisch's 40 patients lived. Only two deaths are recorded in the 14 recently re-

ported cases and one of these died 32 years after the original injury. We suspect that the habit of reporting fatal cases is not as common a habit as formerly. The mortality in the whole series is over 50 per cent. Of the 27 patients that have recovered, three who died of intercurrent disease have shown firm union at autopsy. Only 12 of the recovered cases have been complete cures. The remainder complained of pain in the head or neck or showed muscle spasm at their last visit and certain ones demonstrated varying degrees of spastic paralysis. Of the 29 fatal cases, only six deaths occurred as an immediate result of the injury. This fact needs emphasis and affords hope, but pleads for immediate intelligent treatment. Death in four of the fatal cases was due to intercurrent disease (pneumonia, nephritic, tetanus, erysipelas) before recovery from the neck injury. Seven died at periods varying from a few hours to a few months as a direct result of the immediate paralysis.

Ten patients, and to these we would direct your special attention, died of a paralysis not coming on at the time of injury. Some slight later accident trivial in character, such as sneezing or a quick turn or lift of the unsupported head, brought on the fatal paralysis in many, and in the rest a slowly developing paralysis took its toll.

In none of the reported cases of cures have there been published satisfactory roentgenograms of the end-result, so that no idea of the amount of bony union or eventual position can be gained. The return of varying degrees of function suggests union or at least stability. The general impression that fractures of the odontoid never unite is evidently erroneous.

Treatment

Manipulation, traction, and immobilization, partial or complete, have been the routine methods of treatment. One patient without cord symptoms, for whom only rest in bed for two months with aspirin for pain was prescribed, had a "normal" range of motion in one and one half years and only slight residual pain. Two patients in the recent series were manipulated under gas anaesthesia with apparent benefit and eventual, partial recovery. One patient manipulated his own head with immediate and permanent relief of pain.

In general, these methods, unless a rather prolonged complete immobilization was maintained, have been inefficient and have resulted in incomplete recovery. One of the reported deaths in the recent series occurred in a patient treated by an immobilization and jury mast traction apparatus. His friends, not being pleased with the cosmetic effect of the appliance, removed it. A paralysis ensued from which he subsequently died.

Only three reports of open operation have been found. Each of these patients exhibited pressure symptoms and was losing ground under conservative treatment. The first case was that published by Mixter and Osgood in 1910 of an old fractured and displaced odontoid with forward dislocation of the atlas. They exposed the posterior arch of the atlas and the spinous process of the axis by a midline linear incision from the occiput downward. By a digital backward push on the anterior arch of the atlas through the pharynx and a backward pull on the posterior arch of the atlas by means of a hook between the cord and the bone, it was possible to partially reduce the forward luxation. They then anchored the atlas to the axis by means of a strong braided silk passed around the posterior arch of the atlas and tied under tension beneath the hooked bifid spinous process of the axis. Ely[5] has since successfully repeated this procedure in a forward dislocation of the atlas, associated with fracture of the odontoid. The third reported open operation for the relief of cord pressure symptoms associated with fracture of the odontoid was performed by Ruszynski[17]. It consisted of a laminectomy with excision of the posterior arch of the atlas through a T-shaped exposure horizontal over the occiput, vertical down the neck. There was no attempt made to reduce the dislocation or anchor the atlas.

Symptoms

The outstanding symptoms have been pain in the head and neck and spasmodic limitation of motion. Pain is relieved, sometimes completely, by immobilization, and exaggerated, sometimes excessively, by voluntary or passive motion. Sicard and Rogers[18], reporting three cases of fractures in the region of the first two vertebrae, call attention to the involvement of the three occipital nerves with anaesthesia, paraesthesia, or hyperaesthesia in the areas of their distribution. The second or great occipital nerve emerging between the atlas and the axis is most commonly irritated or pinched in uncomplicated fractures of the odontoid, and pain streams up the occiput often intermittently and often intensely. These same signs may obviously be present in atloaxoid dislocations without fracture. There is occasionally a cutaneous branch of the suboccipital nerve from the first cervical emerging over the arch of the atlas. The distribution is over the back of the head. The small occipital also arises from the second cervical and is distributed to the scalp more laterally.

These nerve symptoms are important symptoms, but their importance lies in the fact that they point only to organic injury in the region of the first two cervical vertebrae. Roentgenologic study should immediately be made in order to determine whether this injury is a pure dislocation, a pure fracture, or a combination or complication of several injuries.

Symptoms and signs which perhaps have not been sufficiently stressed in literature are those which are evident in the posterior pharynx. The patient will often complain of the presence

of a bunch or ledge in the back of his throat and will experience difficulty in swallowing. Pain in swallowing may be a symptom even when no displacement can be appreciated and palpation shows no bulging of the pharyngeal wall. Palpation of the posterior pharyngeal wall will reveal in rotary dislocations of the atlas a greater prominence on the one side than on the other, as the right or left lateral mass of the atlas is projected forward. When the whole atlas has assumed an anterior position, as in simple forward dislocations of the atlas on the axis or in fractures of the odontoid with forward and downward displacement of the atlas, the transverse ridge of the whole anterior arch of the atlas can be felt by the examining finger.

We hardly need to call attention to the frequent immediate symptoms and signs of pressure on the spinal cord and brain stem. These, of course, vary from sudden death to complete or partial paralysis. The latter may be hemiplegias, diplegias, quadriplegias, or of the Brown-Séquard type.

The late symptoms and signs are those upon

FIG. 1. Case of Dr. E. S. Murphy, Dixon, Ill. Fresh fracture of odontoid at base.

which the emphasis should be laid. They are often obscure in nature and gradual in progression, but they need attention which is acute and treatment which is definite. They consist of signs of peripheral nerve involvement or of cord pressure. They are caused by excessive callus formation, by the irritation of abnormal mobility, or by the late development of an osteomyelitis. The penalty which they may exact is a causalgia which is distressing or a transverse myelitis which is lethal.

Treatment

The essential principle of treatment is complete immobilization. In the literature manipulation plays an important role and it seems justifiable to attempt the reduction of a marked displacement disclosed by a roentgenogram if it can be accomplished with reasonable safety. Signs of cord pressure are commonly lacking or are intermittent. Fortunately, there is much more room for the cord in this region than in any other; the posterior arch of the atlas has a wide span.

We direct your attention to the real danger of any forceful and all unintelligent manipulation. Patients with fractures of the odontoid have had a sudden exitus from sneezing or coughing, days and weeks after the injury.

In the absence of serious pressure symptoms, complete immobilization is the safest procedure in all cases in which a fracture of the odontoid is suspected, even if the exact nature of the injury and the amount of displacement must be determined later. Pillows, sandbags, the application of circular plaster bandages are inefficient and unsafe methods of continued treatment. We believe the best method is to make as quickly as possible a bivalved cuirass of plaster or leather whose posterior half shall extend from the vertex to the low thoracic spine and whose anterior half shall extend from the chin to well below the nipples. To afford complete immobilization, both these halves must be accurately moulded to the posterior and anterior contours of the body, especially of the scapulae and clavicles, the neck and the chin.

The mould for such a cuirass may be obtained with the help of several pairs of strong hands to steady the head and body by laying the greased body and cotton covered head of the patient in a lake of cool plaster cream poured into a rubber sheet covering the bed, the sides of the lake basin being formed by sandbags or pillows. When the posterior half has hardened and its wide projecting piazzas have been greased, the anterior mould is made by pouring plaster cream over the front of the body and neck, including the chin. Care must be taken in pouring not to allow the edges of the anterior half to overlap the piazzas of the posterior half, else it will be difficult to lift the anterior portion off when it has set. Since plaster acquires considerable heat in the setting process, too long delay may mean burning the patient's skin. The two moulds are apposed and filled and the sculptural torso is ready to serve as a model for a permanent plaster or leather cuirass. This may be made deliberately, since there is no danger of further displacement of the torso's odontoid. A plaster cuirass can be ready in twelve hours. A stiffened leather and reinforced steel cuirass takes longer to prepare. The patient's head and neck are protected in the meantime by light traction, sandbags, pillows, and an efficient Thomas collar.

We believe this immobilization should be maintained until danger of displacement is slight or union is assured. We have little to base our advice upon, but in the two cases we have treated we have maintained complete immobilization for three months and then substituted the less complete immobilization of an efficient Thomas collar for three months more.

In the old cases with causalgia or beginning cord pressure symptoms, we believe an efficient Thomas collar with an occipital head portion and a forehead strap will afford sufficient protection, for there is little danger of sudden body movement causing sudden displacement. The length of time this immobilization should be continued must vary with the individual case, but we can visualize a condition in which some protection of this sort would be worn during the remainder of the patient's life if no operative procedure could be devised to afford relief.

OPERATIVE PROCEDURE

Operative procedures have been planned to relieve pressure. There has been at least one successful case of laminectomy. No direct operative replacement of the separated odontoid fragments has, as far as we have reviewed the literature, been attempted. The slipping forward of the atlas is a very real danger in many cases and if it slips beyond a certain point, cord pressure and death will necessarily take place. We believe in these cases there is a place for the procedure of Mixter and Osgood above referred to. Knowing as much as we now know of the efficiency of living fascial sutures, it would probably be better to pass a strip of fascia instead of silk around the posterior arch of the atlas and anchor it to the hooked spinous process of the axis.

The keynote of successful treatment would seem to be, in the early cases, immediate immobilization, at first complete and later almost complete, maintained for perhaps six months in order to escape the frequent serious and slowly progressive changes which are sometimes lethal. In the older cases also, immobilization varying in completeness and length of administration is essential unless operative procedures offer a shorter and surer chance of relief.

COMMENT

1. After falls upon the head or blows upon the head, fractures of the odontoid process and

lesions of the upper two cervical vertebrae should be suspected when there are signs and symptoms of limitation of neck motion and occipital pain, even if no spinal cord or nerve root symptoms are present.

4. Open operation offers a chance of permanent betterment in certain cases exhibiting persistent symptoms and associated with forward displacement of the atlas.

There follows the report of a personal case.

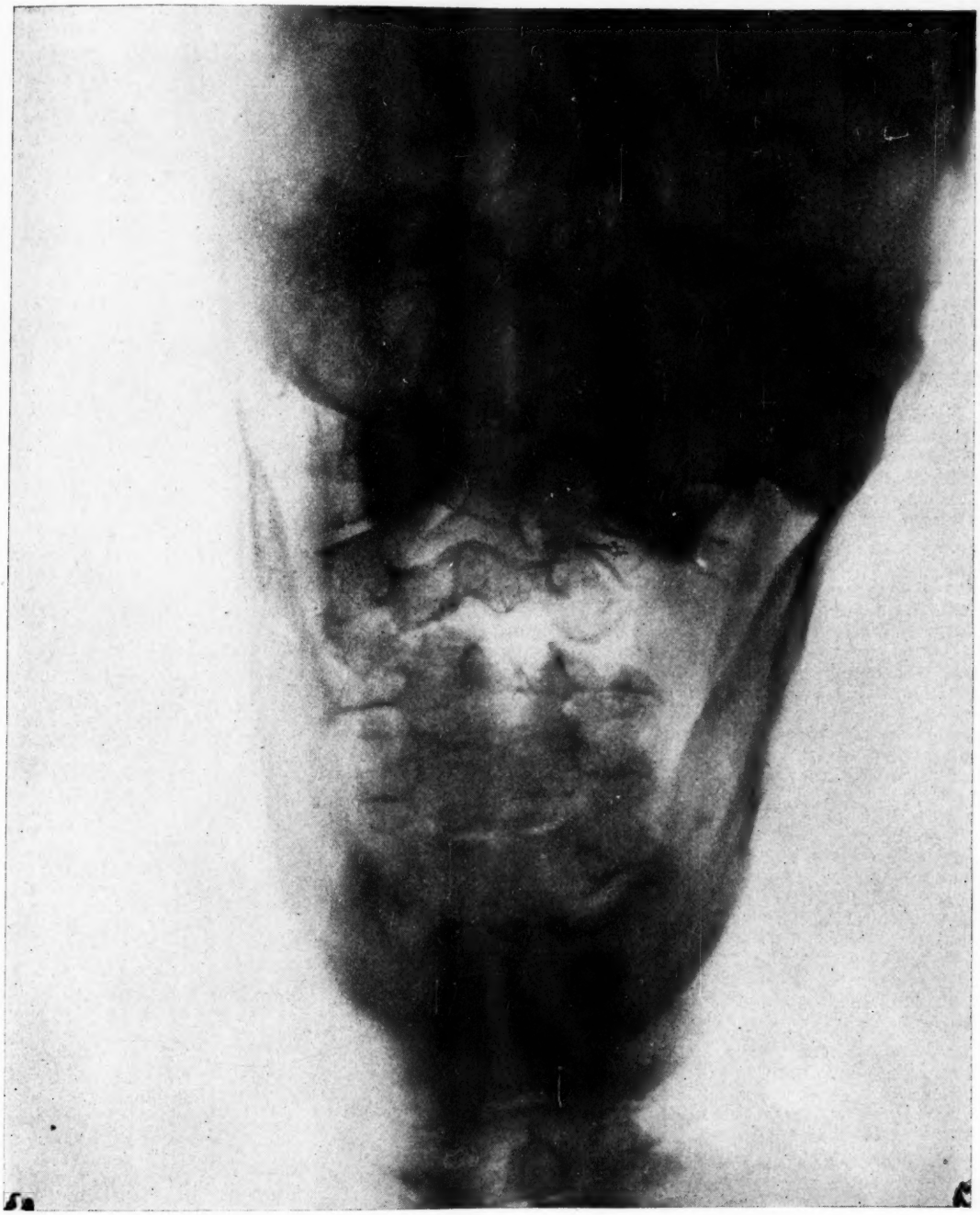

FIG. 2. Same case as Fig. 1, two years later. Recovery and union.

2. Clear roentgenograms taken laterally and obliquely through the wide open mouth are essential in establishing the diagnosis.

3. Complete immediate and prolonged immobilization is essential if present relief is to be afforded, subsequent return of function is to be favored, and dangerous, sometimes fatal, sequelae are to be avoided.

C. C. L. Age 30. Occupation, surgeon. Involved in an automobile collision on November 17, 1925. The Ford sedan in which the patient was riding was struck by a heavier car going at a right angle to it and making an estimated speed of forty miles an hour.

The car was immediately righted by the bystanders, and the patient, who was not unconscious, was assisted out. He was able to stand and walk unsup-

ported, but noticed severe pain in the back of his neck. After a rather painful ride in a taxi he walked into the accident ward of the hospital and lay down on the table. Once there he had no desire or inclination to lift his head again. After examination by Doctors Torr Harmer and J. C. Hubbard a cardboard Thomas collar was made and Roentgen examination done. At this first physical examination pain, tenderness, and spasm in the neck were noted, the spasm being such that the head could not be moved in any direction except in the slightest possible degree. There was no prominence felt in the pharynx and no cord pressure symptoms were noted. The rest of the examination was negative. There were not even any cuts or bruises. The first roentgenogram, the antero-posterior view through the mouth, was unsatisfactory.

The next morning the patient's condition was about the same, except that he had severe dysphagia. Even the swallowing of a little saliva caused painful, spasmodic contractions of the pharyngeal muscle, lasting several seconds. He also noticed during the night that there was a large area of anaesthesia on the left side of the occiput.

During the next few days the pain decreased slightly, but the spasm very little. Lying in bed with the head supported by a collar was the only treatment. Sandbags were tried, but were not satisfactory. After the first day the patient was able to turn on his side, by doing so very slowly and without help and, although the turning was painful, he received some temporary relief from the change of position.

After a week more roentgenograms were taken and the antero-posterior view showed positively that there was a fracture of the odontoid. Dr. Osgood was called and immediately set to work to make a leather cuirass, using the methods described above. This process was not uncomfortable to the patient, who found his first real relief from pain while lying in his lake of plaster. As soon as the cuirass was applied, about a week later, there was tremendous relief from pain. In spite of its uncomfortable appearance it was not really uncomfortable. It was worn day and night for three months. As soon as it was applied the patient began gradually to sit up in bed and was out of bed in a week. After three months it was removed and a moulded leather Thomas collar applied. At this time daily gentle massage and exercises began, which were very gradually increased during the next two months. I might say here that the patient began to do a little work within six weeks after putting on the cuirass,—that is, eight weeks after the accident,—and actually did a cholecystectomy three months and a half after the accident, while still wearing the cuirass. The patient and surgeon both survived.

During the last month of wearing the Thomas collar the patient was allowed to remove it for gradually increasing periods, and by this time had almost normal motions in the neck, left rotation being the last to return completely.

From the first application of the cuirass until the present time the patient has had no pain worth mentioning. Roentgen-ray examinations were made at intervals of one month to follow the course of healing until removal of the Thomas collar, another set being taken at the end of one year. This latter series will be shown to demonstrate the anatomical end-result.

Our thanks are due to Dr. Torr W. Harmer for first aid treatment and to Dr. J. C. Hubbard for his care during the first week; also to Doctors George W. Holmes and Lawrie B. Morrison for their many painstaking Roentgen-ray examinations.

Schematic Summary of Recent Articles Under the Headings of Etiology, Diagnosis, Signs and Symptoms, Cord Complications, Course and Treatment, and Result

A. *Etiology*

Case No.	Author	Notes
1.	Ruszynski	Swimming, struck by diver.
2.	Naegeli	Fell from load of hay.
3.	Forbes	Slipped walking on beach.
4.	Blaine	Claimed to be due to chiropractic adjustment.
5.	Le Breton	Horse sat on neck.
6.	Nicholson	Struck by falling tree.
7.	Frisch	Fell to ground.
8.	"	Fell down steps.
9.	Edwards	Being carried, was dropped (age 4).
10.	Osnato	Fell to back of head.
11.	Ely	Fell while skating.
12.	"	Fell 9 feet into elevator shaft.
13.	Mixter and Osgood	Fell from tree. Struck head on limb on way to ground.
14.	Osgood and Lund	Automobile collision.
15.	Wüsthoff	Fell from load of bushes.
16.	Elliott and Sachs	Fell from scaffold.

B. *Diagnosis*

Case No.	Author	Frac. Odontoid	Dislocation of Atlo-Axoid Jt.
1.	Ruszynski	Yes	Yes
2.	Naegeli	Yes	Yes
3.	Forbes	Yes	Yes
4.	Blaine	Yes	Yes
5.	Le Breton	Yes	Slight
6.	Nicholson	Yes	Slight
7.	Frisch	Yes	Slight
8.	"	Yes	No
9.	Edwards	Yes	Yes
10.	Osnato	Yes	Yes
11.	Ely	Probably	Yes
12.	"	Probably	Yes
13.	Mixter and Osgood	Yes	Yes
14.	Osgood and Lund	Yes	No
15.	Wüsthoff	Yes	Yes
16.	Elliott and Sachs	Yes	Yes

C. *Signs and Symptoms*

Case No.	Author	Notes
1.	Ruszynski	Pain and stiffness in neck. Hemiplegia of Brown-Séquard type from start, gradually became worse for two months.
2.	Naegeli	Pain and stiffness of neck. Later, one month after first course of treatment, paralysis.
3.	Forbes	Pain and stiffness of neck. Dysphagia. Hyperaesthesia of occipital nerve.
4.	Blaine	Pain and stiffness of neck. Paralysis later after treatment interfered with by patient's friends.
5.	Le Breton	Pain and stiffness in neck.
6.	Nicholson	Pain and stiffness in neck.
7.	Frisch	Pain and stiffness in neck.

8.	Frisch	Pain and stiffness in neck. Paraesthesia of occipital nerve.
9.	Edwards	Pain and stiffness in neck.
10.	Osnato	Pain and stiffness in neck. Immediate complete paralysis. Gradual improvement after three days.
11.	Ely	Pain and stiffness in neck. Prominence of atlas in throat.
12.	Ely	Pain and stiffness in neck. Prominence of atlas in throat. Paralysis after two months.
13.	Mixter and Osgood	Pain and stiffness in neck. Dysphagia at first. Prominence of atlas in throat.
14.	Osgood and Lund	Pain and stiffness in neck. Dysphagia at first. Anaesthesia followed by paraesthesia of occipital nerve.

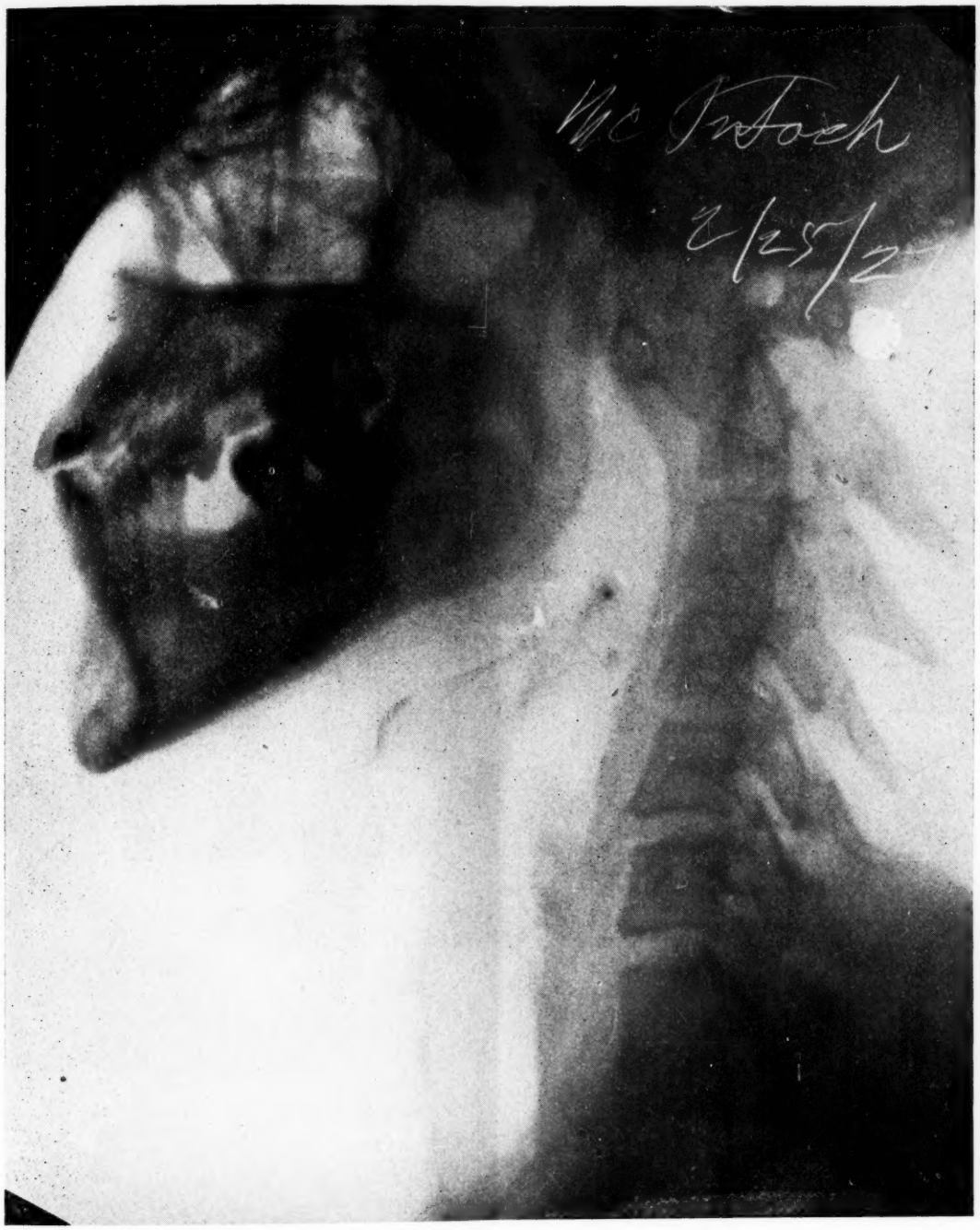

FIG. 3. Twenty-year end-result in Mixter and Osgood's case of fracture of odontoid and forward dislocation of atlas. Symptoms relieved by anchoring posterior arch of atlas to spinous process of axis.

		No prominence of atlas in throat.
15.	Wüsthoff	Pain and stiffness in neck. Late paralysis. Mass in throat.
16.	Elliott and Sachs	Pain and stiffness in neck —intermittent. Slight

		paralysis — intermittent. First injury 32 years before final one.

D. *Cord Complications*

Case No.	Author	Notes
1.	Ruszynski	Immediate Brown-Séquard hemiplegia.
2.	Naegeli	Late quadriplegia.
3.	Forbes	None.
4.	Blaine	Late quadriplegia.
5.	Le Breton	None.
6.	Nicholson	None.
7.	Frisch	None.
8.	Frisch	None.
9.	Edwards	None.
10.	Osnato	Immediate quadriplegia.
11.	Ely	None.
12.	Ely	Late quadriplegia.
13.	Mixter and Osgood	None.
14.	Osgood and Lund	None.
15.	Wüsthoff	Late quadriplegia.
16.	Elliott and Sachs	Late quadriplegia.

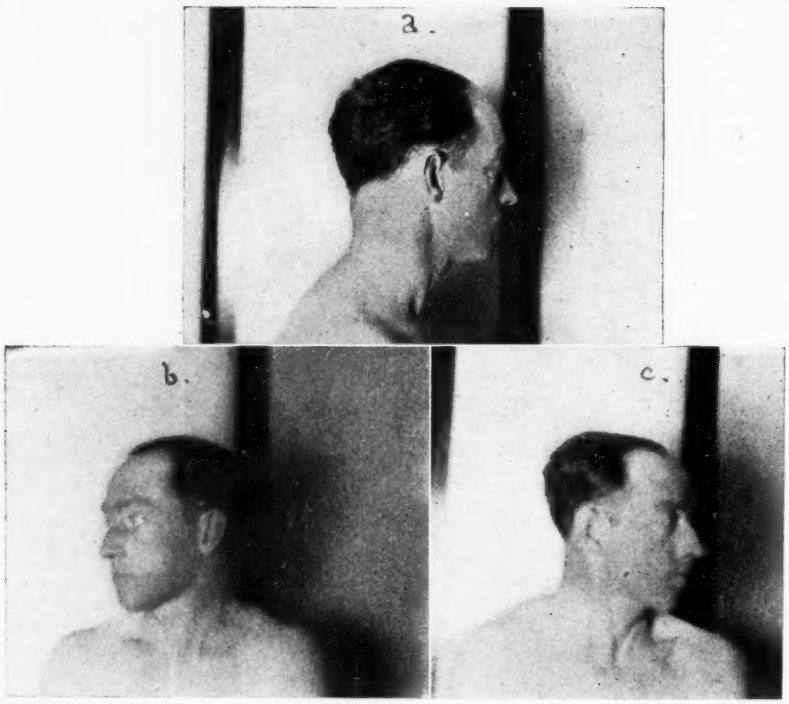

FIG. 4. End-result in Mixter and Osgood's case 20 years after accident.
a. Lateral aspect.
b. Largest amount of possible voluntary rotation to right.
c. Largest amount of possible voluntary rotation to left.

E. *Course and Treatment*

Case No.	Author	Notes
1.	Ruszynski	Hemiplegia gradually became worse in two months' "conservative treatment." Then laminectomy of posterior arch of atlas. Then steady improvement.
2.	Naegeli	No improvement in three weeks' observation. Then attempted reduction, followed by traction for two weeks. Then walked without support. One month later severe paralysis, then traction for three months with progressive improvement.
3.	Forbes	No improvement in six weeks' observation. Then successful reduction under general anaesthesia. Plaster for two weeks and leather collar for three months.
4.	Blaine	Put in plaster with jury mast. Interference by friends. Returned ten months later with quadriplegia. No further treatment mentioned. Died in five months.
5.	Le Breton	After six days, patient manipulated his own head with relief of severe pain. Plaster collar for three months.
6.	Nicholson	None described by author.
7.	Frisch	Rest in bed and aspirin with gradual improvement for two months.
8.	Frisch	Rest in bed.
9.	Edwards	Manipulation under nitrous oxide. Plaster for six weeks. Gradual improvement.
10.	Osnato	Rest in bed one month. Gradual improvement. Massage of extremities.
11.	Ely	Casual for nine months. Then Calot jacket for five months with steady improvement.

12.	Ely	Plaster for two weeks, then none for six weeks, at which time paralysis appeared. Then Calot plaster for six weeks, during which time paralysis cleared. Two weeks after this knocked down and paralysis recurred. Calot jacket applied and paralysis improved. Plaster off	Thomas collar in place of plaster with immediate increase of pain. Operation done, consisting of pulling posterior arch of atlas back with assistance of pushing on anterior arch of atlas in pharynx. Posterior arch of atlas tied to spine of axis with silk. Leather cuirass worn for

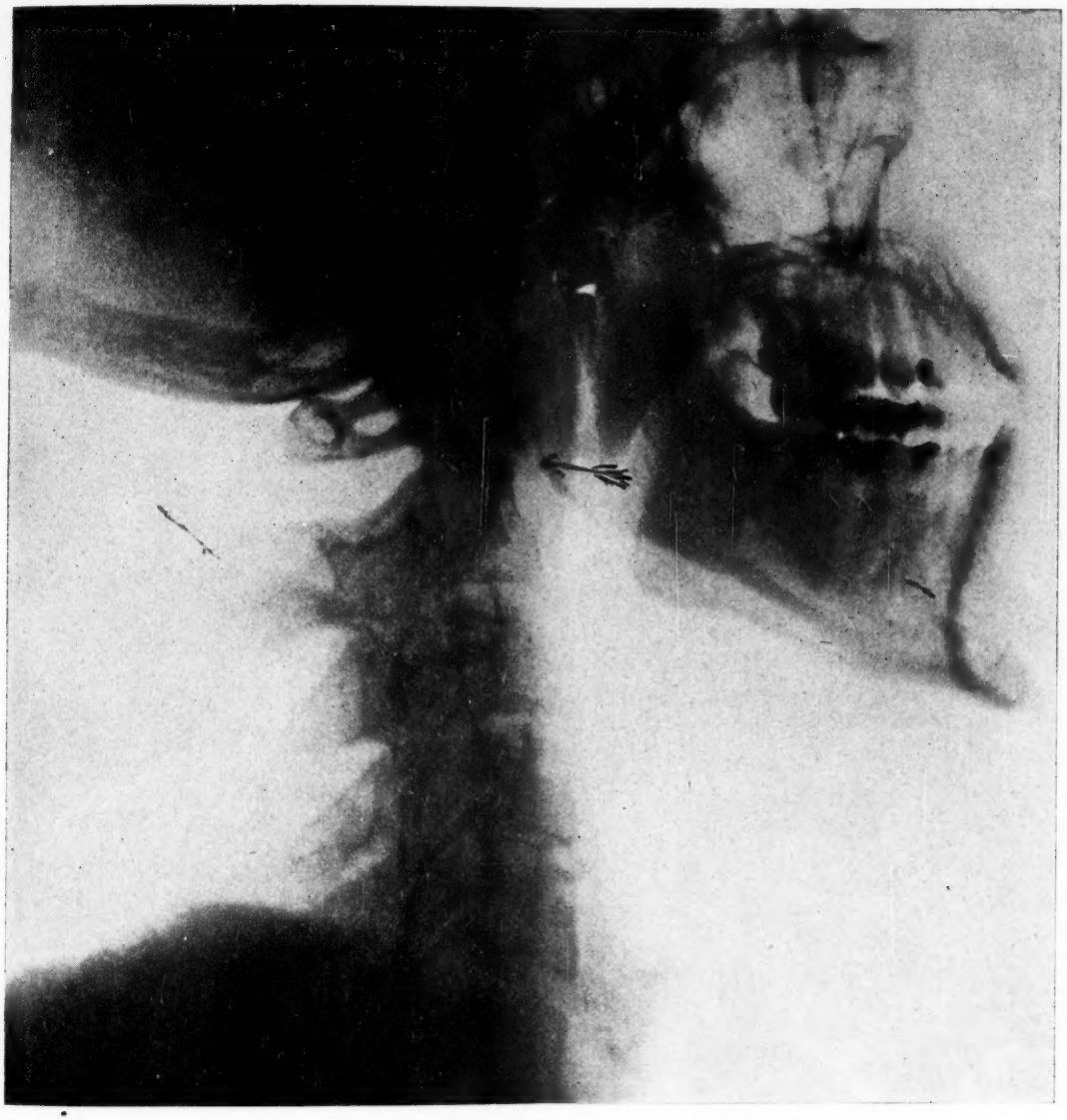

FIG. 5. Authors' case of fracture through base of odontoid with almost no displacement.

		after four months. Paralysis recurred in two months. Cleared again in one month. Then Mixter and Osgood operation and plaster for six months. Paralysis almost completely cured in one year.	two months. Immediate relief of pain and gradual improvement in function of neck.
13.	Mixter and Osgood	Observation for five weeks, then manipulation with temporary relief of pain. After six months manipulated again and plaster applied. After one month	14. Osgood and Lund Rest in bed with cardboard Thomas collar for two weeks, during which time dysphagia cleared and pain improved. Leather cuirass for three months. Leather Thomas collar for three months more. After two months, baking, massage, and guarded exercises.

		Complete normal function of neck without pain in six months.	
15.	Wüsthoff	Casual for five months, during which time the paralysis began and progressed. Then traction in bed for one week, followed by plaster for three months. Massage of extremities. Fair recovery from paralysis, but no rotation of head.	relieved by rest. Five years later fell again. Two months' rest, recovered. Seven years later fell on ice and had definite quadriplegia, worse on right. Calot jacket improved him, but he would not stand it. Plaster with jury mast then put on but he lost ground. Six months later was walking with the help of an orderly, who slipped, and the patient's neck was strained. Immediate almost total quadriplegia. Died one month later. Autopsy showed false joint at site of fractured odontoid.
16.	Elliott and Sachs	Rest at first, recovered and worked, including five years' army service. Fell again twenty years later, but had few symptoms for five months, when paralysis came on without immediate injury. This was	

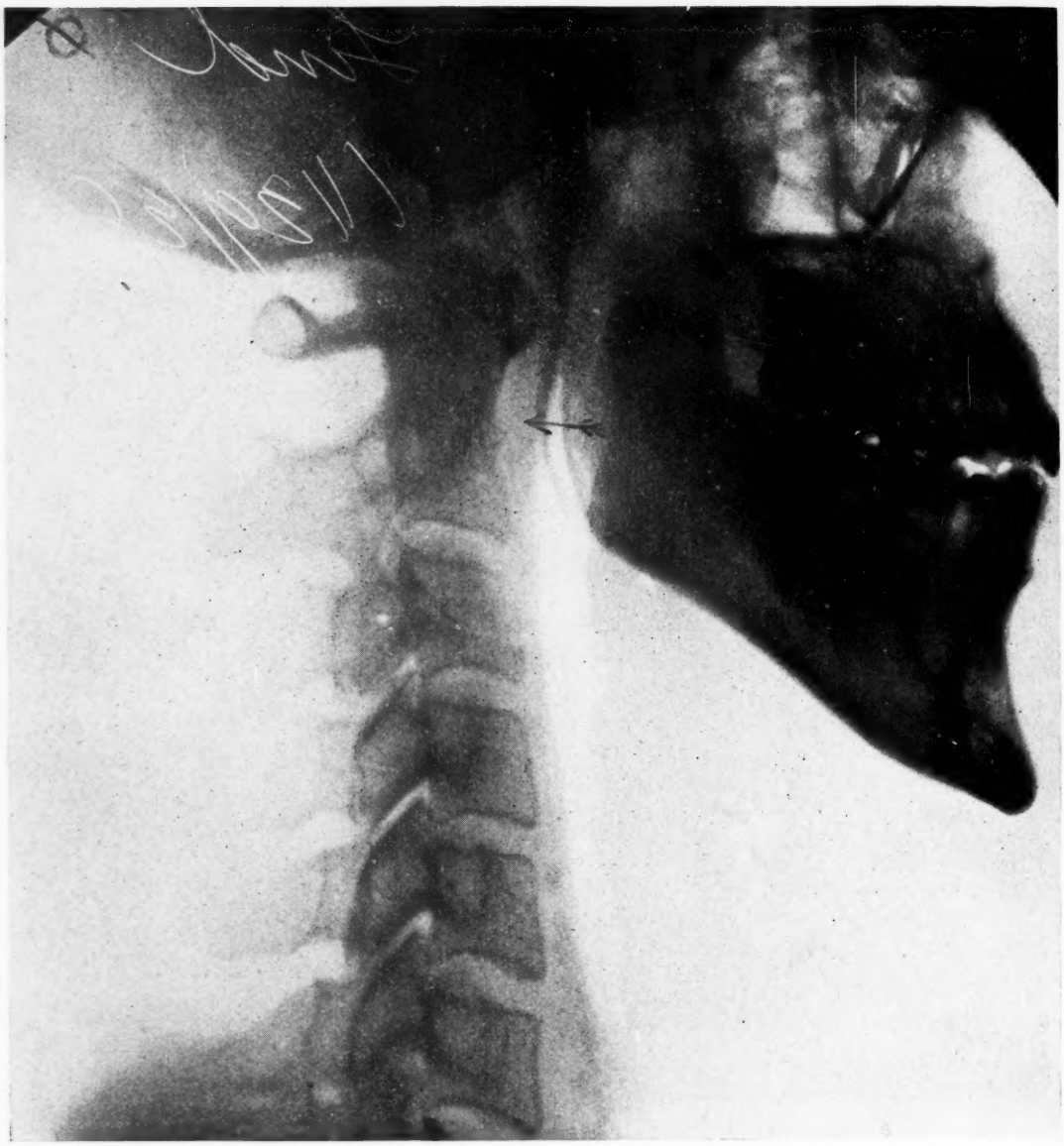

FIG. 6. Authors' case 9 months later, with firm union and return of full function.

F. *Result*

Case No.	Author	Time Followed	Condition at that Time
1.	Ruszynski	5 months	Partial paralysis but able to walk. No pain in neck.
2.	Naegeli	1 year	Partial paralysis but able to walk.
3.	Forbes	1 year	Complete cure.
4.	Blaine	16 months	Died of paralysis. Autopsy.
5.	Le Breton	6 months	Slight stiffness. No pain.
6.	Nicholson	10 weeks	Stiffness and pain.
7.	Frisch	1½ years	Slight pain, no stiffness.
8.	Frisch	2 weeks	Pain and stiffness.
9.	Edwards	1 year	Complete cure.
10.	Osnato	1½ years	Partial paralysis, but able to walk. No pain.
11.	Ely	1 year	Head turns only to left. No pain.
12.	Ely	14 months	Very slight paralysis, but able to do stenography.
13.	Mixter and Osgood	21 years	Normal after one year. Continues to date.
14.	Osgood and Lund	22 months	Normal after six months. Continues to date.
15.	Wüsthoff	10 months	Partial paralysis. Stiff neck.
16.	Elliott and Sachs	32 years	Died as result of paralysis.

BIBLIOGRAPHY

Complete bibliography of early articles may be found in Sicard and Rogers[18] and in Frisch[17].

1 Blaine, E. S.: Manipulative (Chiropractic) Dislocation of the Atlas. Jour. A. M. A., 1915, Vol. 85, pp. 1356-1358.

2 Boeckel, J., and Boeckel, A.: Des fractures du rachis cervical sans symptomes medullaires. Rev. de Chirurgie, 1911, Vol. 44, pp. 48-88 and 285-381.

3 Edwards, J. G.: Fracture Dislocation of Cervical Spine in a Child. Med. Jour. of Australia, 1920, Vol. 1, p. 3111.

4 Elliott, G. R., and Sachs, E.: Observations on Fracture of Odontoid Process of the Axis with Intermittent Pressure Paralysis. Annals of Surgery, 1912, Vol. 56, pp. 876-882.

5 Ely, L. W.: Subluxation of the Atlas. Annals of Surgery, 1911, Vol. 54, pp. 20-29.

6 Forbes, R. D.: Dislocation and Fracture of the Atlas. Northwest Medicine, 1921, Vol. 20, pp. 274-276.

7 Frisch, E.: Über die Fracturen des Zahnfortsatzes des Epistropheus. Deut. Zeit. f. Chir., 1912-'13, Vol. 120, pp. 7-34.

8 Frisch, E.: Nachtrag zu meiner Arbeit, "Über die Fracturen des Zahnfortsatzes des Epistropheus." Deut. Zeit. f. Chir., 1912-'13, Vol. 120, pp. 183-185.

9 George, A. W.: A Method for More Accurate Study of the Atlas and Axis. Boston Med. and Surg. Jour., 1919, Vol. 181, pp. 395-398.

10 Hartwell, J. B.: An Analysis of 133 Fractures of the Spine Treated at the Massachusetts General Hospital. Boston Med. and Surg. Jour., 1917, Vol. 177, pp. 31-41.

11 Jefferson, G.: Fracture of the Atlas Vertebra. Brit. Jour. of Surg., 1919-'20, Vol. 7, pp. 407-422.

12 Le Breton, P.: A Case of Fracture of the Odontoid Process of the Axis. Amer. Jour. of Orth. Surg., 1916, Vol. 14, pp. 549-551.

13 Mixter, S. J., and Osgood, R. B.: Traumatic Lesions of the Atlas and Axis. Annals of Surgery, 1910, Vol. 51, pp. 193-207.

14 Naegeli, Th.: Atlas Luxation nach vorn mit Fraktur des Zahnfortsatzes des Epistropheus. Deut. Zeit. f. Chir., 1919, Vol. 148, pp. 269-275.

15 Nicholson, G.: Fracture of Odontoid Process and Partial Dislocation of Atlas without Compression of the Cord. Brit. Med., Jour., 1924, Vol. 1, p. 465.

16 Osnato, M.: Non-Operative Treatment of Fracture of Cervical Vertebra with Cord Injury. Jour. A. M. A., 1921, Vol. 76, pp. 1737-1739.

17 Ruszynski, F.: Beitrag zur Therapie der Luxationen und Luxationsfrakturen im unteren Kopfgelenk. Deut. Zeit. f. Chir., 1926, Vol. 198, pp. 76-81.

18 Sicard, J. A., and Roger, H.: Anaesthesia of the Suboccipital Nerve as a Sign of Fracture of the Posterior Arch of the Atlas. Paris Médical, 1917, Vol. 7, pp. 540-541.

19 Wüsthoff, R.: Über die Luxationsfraktur im unteren Kopfgelenk. Deut. Zeit. f. Chir., 1923, Vol. 183, pp. 73-98.

Discussion

Dr. W. J. Mixter, Boston: I feel that this is an important subject even though it is a rare condition, largely on account of the possibility of very severe late results. Sneezing or coughing, weeks later, may cause complete paralysis or death. It has been very strongly brought home to me on account of a recent case how difficult it is to control these patients. This was a young lad who was injured two and a half years ago, playing tug-of-war with a belt around the back of his head. He had a sharp pain in the back of his neck and stopped playing, and in the evening I was called to see him. At that time he had marked rigidity of the neck and absence of all rotation. These were the only abnormal findings. X-ray showed separation of the odontoid. He never showed any neurological symptoms at all aside from the stiffness in his neck. He had one curious finding—he had a temperature of 105 the next morning, which stayed up for two days. He was kept in traction for three or four months, and then given a high collar with a strap around the forehead. This little fellow is playing football today, and I cannot prevent his father from letting him play football. I am expecting to hear any time that the boy has been killed.

I think Dr. Osgood has worked out a better scheme of immobilization than we used. I think the cuirass is better than prolonged traction.

Dr. J. B. Woodman, Franklin, N. H.: During the war I saw two men who I think would come under the category of injury of the odontoid or odontoid and atlas. One had been standing on the rear of a truck and was thrown backward, striking on the back of his head; the other had had a tonsillectomy and was dragged back on a straight table and his head was allowed to fall back. The roentgenograms showed a slipping around of the atlas and one-sided dislocation so that the men held their heads stiff and to one side, and muscle spasm was present. These cases were months old, and it was hard to get satisfactory xrays, but we could feel the prominence in the back of the pharynx. We didn't try to straighten these cases out.

Thirteen years ago I was called to see a man who was thrown from his team and was dragged, his head bumping along the ground. Aside from having a loosening of the retina so that he lost the sight of one eye, he sustained injuries of the neck which Dr. Osgood thinks doubtful if a fracture of the odontoid. There is a backward tipping of the atlas on the axis, so the man has to carry his chin protruding. He also has

FIG. 7. Lateral view of immobilizing leather and steel cuirass with head strap. Authors' case.

a fusing together of the third and fourth cervical vertebrae from a compression fracture. His symptoms were terrific pain in the back of the neck and in the arms, and when I saw him ten minutes after the injury he was sitting on a chair and holding his head up with both hands. We took hold of his head and lifted up, which gave him great relief, and then we built him up a plaster of paris cuirass and we molded those about his head, neck, shoulders, and chest. He was put to bed in this and developed hypostatic pneumonia from which he recovered. We kept him in this cuirass for four months and then in a Thomas collar. He returned to work after six months and worked for twelve years.

DR. ROBERT B. OSGOOD, Boston: I call your attention to the fact that Dr. Mixter reported one, and Dr. Woodman two cases of fracture of the odontoid. It is perhaps a more common injury than is the general impression. You will find it stated in the old literature that fractured odontoids never unite. We seem to have proved to you that they may unite. They are supposed to be usually fatal, but union may take place and there is operative relief in certain cases where there is non-union. Perhaps this warrants our bringing the subject to your attention. The end results are not all bad if the patients can be promptly and appropriately treated. We ought to be able to recognize them with the help of roentgenograms.

DR. EDMUND H. STEVENS, Cambridge: I would like to report two cases that were brought

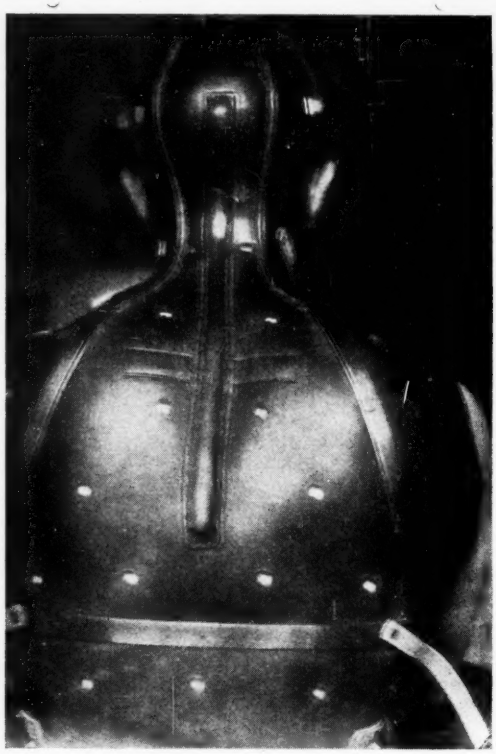

FIG. 8. Back view of immobilizing leather and steel cuirass. Authors' case

to the Cambridge Hospital many years ago. Two men were thrown backwards from the back seat of a wagon. When they were brought into the hospital they were breathing with difficulty and died soon after. Both were paralyzed from the shoulders down. At the autopsy it was found that the odontoid process was broken almost exactly alike in both cases.

ORIGINAL ARTICLES

DIPHTHERIA DEATHS IN MASSACHUSETTS, 1926*

Second Chronological Report[1]

BY EDWARD A. LANE, M.D., AND FILIP C. FORSBECK, M.D.

IN 1919, Carey[1] reported a study of 1,000 diphtheria deaths occurring in Massachusetts. At that time the general trend was for the incidence to remain constant from year to year, while the fatality rate was slowly dropping, presumably due to the increased use of antitoxin. Since this report the picture has changed. The fatality rate is no longer dropping, but there has been a spectacular drop during the last four years in the incidence of the disease. While there has been a general decrease in the prevalence of diphtheria, in non-immunizing as well as immunizing communities, in all probability the extensive use of toxin-antitoxin has played a part in the declining incidence of the disease.

In the years 1920-1926, inclusive, there occurred a gradual change in the age distribution of cases. The relative incidence diminished in the age group 6-14, while there was a relative increase in both the group 0-5, and the group above 14, as shown in the following table:

DIPHTHERIA CASES, 1920-26, CLASSIFIED BY AGE GROUPS

	0-5		6-14		15 plus		Total Age	
Year	C.	%	C.	%	C.	%	Given	%
1920	2,612	38.8	2,959	44.1	1,153	17.1	6,724	100
1921	3,259	39.1	3,841	46.0	1,244	14.9	8,344	100
1922	3,414	41.5	3,623	44.1	1,169	14.4	8,206	100
1923	3,440	40.5	3,917	46.0	1,158	13.5	8,515	100
1924	2,859	43.5	2,690	40.8	1,040	15.7	6,589	100
1925	1,776	43.5	1,629	40.0	670	16.5	4,075	100
1926	1,376	44.8	1,144	37.3	550	17.9	3,070	100

This is one of the factors which point to the probable influence of active immunization on the incidence of the disease. Since the school group is principally the one between 7 and 14, and the one in which by far the greater part of active immunization has been done, this change in age distribution is just what one would expect if immunization were actually influencing the morbidity.

This paper is an analysis of 146 unselected deaths from diphtheria occurring in Massachusetts, exclusive of Boston, in 1926. The total diphtheria deaths reported for that year were 249, of which 58 occurred in Boston.

AGE AND SEX DISTRIBUTION

				Percentage Distribution	
Age	Male	Female	Total	146 deaths studied	Total deaths for year
Under 1	3	1	4	2.8	4.8
1	9	9	18	12.4	13.7
2	12	6	18	12.4	11.2
3	13	9	22	15.2	13.7
4	11	8	19	13.1	12.9
5	7	12	19	13.1	—
6	7	6	13	9.0	—
7	5	2	7	4.8	30.9*
8	3	4	7	4.8	—
9	4	1	5	3.3	—
10-14	2	4	6	4.2	4.8
15-19	0	1	1	.7	1.2
20-29	2	2	4	2.8	3.2
30-39	0	0	0	.0	.8
40-49	1	1	2	1.4	2.0
50-59	0	0	0	.0	.4
60-69	0	0	0	.0	.4
	79	66	145	100.0	100.0
Unknown			1		
			146		

*Includes age group 5-9.

ECONOMIC CONDITION OF FAMILY

	Number	Percentage Distribution
Good	16	12.5
Fair	25	19.5
Poor	87	68.0
	128	100.0
Not stated	18	
	146	

IMMUNITY

None of the 146 individuals had been actively immunized. Only one child had ever been given the Schick test. In this instance the test, which had been given 2 years previously, was said to have been negative.

SOURCE OF INFECTION

The probable source of infection was found in 28 instances, or 19.2 per cent. of the total. This is an increase over analogous figures reported by Carey[1] which showed that the source of infection was known in 10.7 per cent. of the cases. Thirteen cases were secondary to another case in the same family, 2 to cases in the home of relatives, 7 were said to have contracted the disease from neighborhood cases, while 3 had been in contact with cases in school. Two had been exposed to cases in a distant part of the city, and one had been exposed outside of the city.

*From the Massachusetts Department of Public Health.

MEDICAL ATTENTION

Eight, or 5.5 per cent. of the total, had no physician during their illness. In 89 instances, both the date of onset to the date of first medical visit are known. The number of days from the date of onset to the date of first visit by a physician is as follows:

PERCENTAGE DISTRIBUTION OF CASES BY DATE ON WHICH PHYSICIAN FIRST SAW THE CASE, GROUPED ACCORDING TO ECONOMIC STATUS

Days	Good (14 cases)	Fair (18 cases)	Poor (60 cases)	Total (92 cases)
Day of onset	29.0	22.0	8.0	14.0
2	21.5	22.0	8.0	13.0
3	7.0	17.0	15.0	14.0
4	.0	17.0	15.0	13.0
5	7.0	5.5	28.0	21.0
6	21.5	11.0	7.0	10.0
7	7.0	.0	7.0	6.0
8	7.0	5.5	3.0	4.0
9	.0	.0	3.0	2.0
10	.0	.0	2.0	1.0
11	.0	.0	2.0	1.0
12	.0	.0	.0	.0
13	.0	.0	.0	.0
14	.0	.0	2.0	1.0
	100.0	100.0	100.0	100.0

The interval between onset and medical attention varied considerably with economic status. Among the families classed as of "good" economic status, the doctor saw the case on the day of onset or the following day in 51 per cent. of the cases, among those classed as "fair" in 44 per cent., while among those classed as "poor" only 16 per cent. had a physician to see the case during the first two days of illness.

On the basis of the distribution of cases by day of disease on which a physician first saw the case, the median in the "good" economic group lies at the end of the second day. In the "fair" group, the median is 2 1-3 days or one-third of a day later than in the group first mentioned. In the "poor" group, the median falls in the early part of the fifth day of the disease (4 2/17 days).

Medical consultation was had in 29 instances.

The foregoing figures indicate very strikingly one of the chief reasons for the continued mortality from this disease. While the too general delay in calling a physician for all manner of illness is well known and regrettable, it is, of course, especially disastrous in the case of diphtheria where each day's delay in the administration of antitoxin may mean a preventable death. The fact that 68 per cent. of the deaths were classed as among the "poor" further indicates the probable complicating factors of economic condition and ignorance.

Unfortunately, data are not available for determining the interval between the date of first visit or of diagnosis by the physician and the date of administering antitoxin. It is felt, however, that some physicians are too prone to wait for the laboratory report before giving antitoxin, thus losing from one to two days or more of absolutely vital importance to the patient's life. For this reason, the card enclosed with the state diphtheria culture outfit reads, "Do not wait for laboratory report before using antitoxin." The fact that 42 patients were given from two to five doses of antitoxin suggests a failure on the part of some physicians to appreciate the great importance of giving a sufficient amount of antitoxin in one dose. It is far better to give more than might have been necessary than to run the risk of giving too little, or of planning to give the full amount in divided doses.

CLINICAL DIAGNOSIS

In only 7 cases, or 5.1 per cent. of the total, did the physician fail to make a diagnosis of diphtheria. This is an apparent improvement over 1919, when Carey[1] reported that 7.6 per cent. of the deaths were not diagnosed as diphtheria. However, the number of deaths studied is not large enough to make the difference statistically significant. Of the mistaken diagnoses, 1 was given as laryngitis, 1 as pneumonia, 3 as tonsillitis, 1 as Little's disease, and 1 as laryngeal stenosis.

In one intance diphtheria was complicated by scarlet fever, in another by measles, and in 3 instances by bronchopneumonia.

LABORATORY DIAGNOSIS

In the 118 cases for which this information is available, 77 had had laboratory examinations. Of these, 57 were reported positive and 20 negative. In a few of the latter instances repeated negatives were obtained. In those cases not so examined occasional comments were, "obvious diagnosis," "not time."

TYPES OF CASES

In 8.2 per cent. of the cases in which a physician was called, the type of diphtheria was not stated. The percentage distribution of the remainder by types is given in the following table:

Type	Number	Per Cent
Pharyngeal	68	50.8
Laryngeal	44	32.8
Nasal	1	.7
Pharyngo-Laryngeal	8	6.0
Pharyngo-Nasal	8	6.0
Laryngo-Nasal	2	1.5
Pharyngo-Laryngo-Nasal	3	2.2
	134	100.0
Not stated	12	
Total cases studied	146	

Roughly then, about one-half the cases were of the pharyngeal type, about one-third were laryngeal, and less than 1 per cent. were nasal. The rest were combinations of these types.

COMPLICATIONS

In 92 cases, or 63 per cent. of the total, there were no complications or none given.

Sixty-one complications were listed for the other 54 cases:

Type	Number	Per Cent.
Cardiac Involvement	23	37.7
Intubation	11	18.1
Toxemia, "Septic"	8	13.1
Pneumonia	7	11.5
Kidney Involvement	5	8.2
Mumps	2	3.3
Measles	2	3.3
Diphtheritic paralysis	1	1.6
"Hypertrophied cervical glands"	1	1.6
Nasal hemorrhage	1	1.6
	61	100.0

Involvement of the heart constitutes the outstanding fatal complication, with intubation, toxemia, and pneumonia next in order.

HOSPITALIZATION

Of the 119 deaths for which this information is available, 73 of the patients or 62.2 per cent., were hospitalized. One case developed after entrance to the hospital. In 42 instances, information is available as to the interval between onset and hospitalization.

	Number	Per Cent
Day of onset	2	4.7
1 day after onset	6	14.3
2 days " "	9	21.4
3 " " "	6	14.3
4 " " "	8	19.0
5 " " "	4	9.5
6 " " "	2	4.7
7 " " "	3	7.1
8 " " "	1	2.5
9 " " "	1	2.5
	42	100.0

ANTITOXIN

No information is given in 11 cases. In 13, antitoxin was not given for the following reasons:

Refused by physician	1
Physician out of town	1
Illness too short	4
Physician not called	7
	13

Seventy-two individuals received one dose of antitoxin. But two were given less than 5,000 units. In these two instances, in each of which the dose was 1,000 U., the serum was administered in one case on the sixth day, while in the other the date of administration is unknown. The largest dose used (140,000 U.) was given to one patient on the sixth day and to another on the seventh day. In general, the later in the course of the disease the antitoxin was given, the larger the dose.

In the remaining 19 instances in which single doses were given, the interval after the onset is unknown.

Antitoxin Given	Number	Average Dose
Date of onset	1	10,000
1 day after onset	6	17,500
2 days " "	4	41,500
3 " " "	11	46,591
4 " " "	13	44,923
5 " " "	6	46,666
6 " " "	6	47,166
7 " " "	4	68,750
13 " " "	1	15,000
15 " " "	1	10,000
	53	

The average single dose for the combined 72 cases was 40,580 U., while the most frequent dose was 20,000 U.

Forty-two patients received from 2 to 5 doses of antitoxin. In most cases these doses were given at daily intervals with equal or progressively larger doses, indicating that the physician had planned to give the antitoxin in divided doses. In 8 other instances antitoxin was given but the amount is not stated.

SUMMARY

1. None of the 146 individuals had been actively immunized against diphtheria.

2. Most of the deaths occurred among the poor.

3. One child died of diphtheria who was said to have had a negative Schick test two years previously.

4. About half of the cases were of the pharyngeal type.

5. Cardiac complications occurred in about one-third of the cases.

6. About two-thirds of the cases were hospitalized.

7. The average dose of antitoxin was about 40,000 U.

ACKNOWLEDGMENTS

We are deeply indebted to the following District Health Officers who painstakingly gathered the material from which this paper has been written:

Oscar A. Dudley, M.D.
Leland M. French, M.D.
Lyman A. Jones, M.D.
Richard P. MacKnight, M.D.
Harold E. Miner, M.D.
George T. O'Donnell, M.D.

Thanks for their coöperation are also due the local health officials in the following cities and towns where investigations covered by this study were made: Acushnet, Beverly, Chelsea, Chicopee, Danvers, Fall River, Fitchburg, Great Barrington, Haverhill, Holden, Holyoke, Ipswich, Lawrence, Leominster, Lowell, Lynn, Malden, Marblehead, Medford, Melrose, Methuen, New Bedford, Northampton, Oxford, Pittsfield, Salem, Somerville, Spencer, Springfield, Wakefield, Waltham, Warren, Watertown, Winchester, Woburn and Worcester.

REFERENCE

1 Carey, Bernard W.: Lessons from a Study of One Thousand Diphtheria Deaths. B. M. and S. J., CLXXX: 67-70, Jan. 16, 1919.

THE RETICULO-ENDOTHELIAL SYSTEM—A GENERAL REVIEW*

BY C. P. RHOADS, M.D.

IN view of recent editorial comment it is felt that a widespread misunderstanding exists in regard to the reticulo-endothelial system. This term has engaged the attention of anatomists, pathologists and clinicians for fifteen years. It has been the basis for papers from scores of laboratories. The interest of such a large number of workers, many with conflicting opinions concerning relatively minor details, has perhaps confused the issue for the ordinary reader. He finds the literature so filled with new terms and complicated theories that he tends to consider the whole matter a purely academic one and quite out of his depth. Fundamentally, the subject is very simple if a certain few basic facts are understood. The subject is so important and applies to so many branches of medicine that every physician interested in scientific work should understand the principles involved.

For these reasons the author has attempted to give a concise, definite outline of the subject. Controversial points are avoided as far as possible. The object of such a review is to clarify what is now a bewildering situation for many readers who have neither the time nor the inclination to work it out alone.

The first step toward the recognition of the reticulo-endothelial system was made by Ranvier in 1891. He described the powers of phagocytosis exhibited by certain free connective tissue cells.

Metchnikoff recognized this group of cells and found that the large cells of the splenic pulp and lymph nodes, certain endothelial cells, like the so-called Kupffer cells of the liver, and some of the large mononuclear cells of the blood stream were also able to phagocyte actively. He felt that they probably had much to do with the production of immune bodies and were actively concerned in resistance to disease.

Ribbert in 1904 conceived the idea of introducing harmless dyes into the blood stream of a living animal. To his surprise he found that all of the body cells were not equally stained. On the contrary, a certain set of cells took up the dye and the remaining cells were stained little or not at all. He repeated this work using colloidal suspensions of various materials, such as sugar of iron. It was found that the particles were picked up by the same cells which in the previous experiments had taken up the dye. These cells were those previously described by Metchnikoff as concerned with phagocytosis of bacteria.

Other observers, particularly Bouffard and Goldman, repeated the experiments using different dyes and observed the same group of phagocytic cells almost specifically stained. Marchand described these cells and supposed them to arise from the adventitia of the local blood vessels. This is of interest because it is the conclusion reached by two of the most recent workers on the subject, Lang and Sugiyama.

In 1913 Aschoff and Kiyono collected all the observations made up to that time and added the results of a number of experiments of their own. They were the first to put forward the conception that these cells were related anatomically and physiologically. These authors felt that since this group of cells had the same function wherever found, which function had a distinct place in the body metabolism, they should be considered as a distinct organ or system. The criterion mainly considered in including cells in this system is the "intensity and frequency of phagocytosis". (Aschoff)

To designate this group of cells the term "reticulo-endothelial system" was chosen. As then understood, that title best expressed the origin of the cells included. The word reticulum, literally meaning a network, has been for years applied to a set of large, pale staining cells found in lymphoid tissue and in bone marrow. These cells were supposed to produce delicate fibrils which impregnated specifically by various methods based on the reduction of a silver oxide solution. Mallory and Parker have recently shown that these fibrils are not a unique substance but are simply fine fibrils of the common connective tissue intercellular substance, collagen. This indicates that the cells forming these fibrils are of the nature of connective tissue and the classification of the large phagocytic cells, commonly supposed to be the source of such fibrils, is thus thrown into question. The function of the cells described under the term of reticulum cells remains the same, whatever their relation to the ground structure, and they must be included with the other phagocytic cells of this system.

The reticulo-endothelial system is composed of four groups of cells, selected because of their similarity in function and morphology.

The first group includes the cells just discussed, commonly called reticulum cells. They are large, pale staining cells found in the splenic pulp, the cortical nodules and pulp cords of the lymph nodes and other parts of the lymphatic apparatus. Whether endothelial, connective tissue or independent in nature, these cells stain intensely by vital methods and take part in the functions of the system.

The second group includes the cells lining the sinuses of the lymph nodes, the blood sinuses of the spleen, the sinusoids of the liver lobules (Kupffer cells) and the capillaries of bone mar-

*From the Pathological Laboratory of the Boston City Hospital, Boston, Mass.

row, adrenal cortex and hypophysis. By most workers these cells are considered endothelial in nature.

A third group of functionally similar cells is made up by the wandering phagocytic cells of connective tissue, originally described by Ranvier.

The fourth and last group includes the phagocytic, mononuclear cells of the blood stream. Some would include under this heading all of the mononuclear blood cells and others only a small part of them. At all events a certain part of these cells must be included.

In 1924 and 1925 Sabin and her co-workers applied the "supravital" technic to the study of the mononuclear phagocytic cells of the blood and tissues. Solutions of dye, particularly neutral red and Janus green, were allowed to dry in a thin film on microscope slides. Tissues or body fluids, such as blood or exudates, were then placed on the slide and sealed under coverslips with vaseline to prevent drying. These preparations were examined under a microscope kept at body temperature. By this method the cells lived for a long time and their activities could be observed.

Working with this technic these investigators concluded that two types of phagocytic cells, monocytes and clasmatocytes, could be distinguished by the way in which they took up the dye. These cells, they felt, have a different origin, the monocyte coming from a primitive reticular cell, which also acts as the source of polymorphonuclear leucocytes and lymphocytes, and the clasmatocyte from endothelium. They described in the monocyte a collection of fine bodies, called a rosette, staining with neutral red, grouped about a clear centrosphere placed close to the nucleus and felt that the phagocytic powers of this cell were limited. They described the clasmatocyte as a somewhat larger cell, lacking in mitochondria and rosette formation. This latter type of cell is distinguished by its activity in phagocytosis and by the irregular distribution of the phagocyted material in the cell cytoplasm. The monocyte is the predominant mononuclear cell of the blood stream, according to this theory, and the clasmatocyte the active phagocytic cell of the tissues.

To sum up: There exists in lymphoid tissue, liver, bone marrow, connective tissue and in the blood stream a group of cells having common morphology, perhaps a common, or closely related, origin and a common function. For the sake of simplicity we collect all these cells under one head and call them the reticulo-endothelial system, because they have some anatomic relation to reticulum and to endothelium.

With this simple outline of the structure of the reticulo-endothelial system in mind, its function as an organ taking part in bodily processes can be more easily understood.

The most interesting function of this cell group has to do with its relation to immune processes. It has been known for a long time that the removal of certain organs, such as the spleen, has a marked effect on the formation of immune bodies, such as hemolysins, precipitins and agglutinins. When workers noticed the phagocytic activity of the cells of the reticulo-endothelial system for material which causes the production of antibodies, their logical conclusion was that these cells produced the immune bodies. More weight was given this assumption by the fact that organs rich in cells of the reticulo-endothelial type were particularly good antibody producers. The ingenious scheme was devised of injecting various nontoxic, particulate materials into the living animal. This material would be taken up by the phagocytic cells and stored in their cytoplasm. This storage would presumably interfere with their other function, such as antibody production. Bieling and Isaac, Gay and Clark and Stewart and Parker, as well as many others, tried this experiment under slightly different conditions and arrived at a surprisingly uniform result. They found that, although small injections might incite the cells to an increased production of antibodies, large injections almost constantly depressed such a formation. Gay and Morrison also showed that the production of a large number of cells of this type in a localized area, such as the pleura, greatly increased the resistance to local infection. This may well be the reason for the well-known difficulty of infecting a granulating surface.

Many hematologists feel that certain cells of the type included under this system are the source of the blood cells. For example, one group of workers, led by Sabin, feel that the red cells arise from the endothelium of the bone marrow and the white cells, including the polymorphonuclears, the mononuclears and the lymphocytes, come from a primitive reticular cell. The endothelial cell of the bone marrow is very phagocytic and is included in the reticulo-endothelial system.

These cells not only take part in the production of the blood cells but are active agents in their destruction. In diseases, such as typhoid fever, malaria and pernicious anemia, they are found packed with erythrocytes in various stages of disintegration. By the use of hemolytic agents this process can be particularly well observed.

As these cells break down erythrocytes, the question immediately arises whether they complete the change of the hemoglobin to bile pigment. That the liver is not required for the formation of the bile pigments has been conclusively shown by Whipple and his associates. Le Peline, Eppinger and others by various technics demonstrated that the cells of the reticulo-endothelial apparatus were the active agents in this process. As final proof Rich demonstrated the formation of urobilin from hemoglobin in pure cultures of these cells.

The function of the storage of iron pigment is related to these processes. In diseased conditions where there has been a marked breakdown of blood, for example, pernicious anemia, the reticulo-endothelial cells are found to be filled with large amounts of iron-containing pigment. Just what the function of the cells is in relation to this pigment is not entirely clear.

The cells of this system react with particular activity to certain specific infections. It is felt by many investigators that they make up the characteristic lesions of tuberculosis, typhoid fever, leprosy and rheumatic fever. In the reaction of the body to ordinary infections these cells can be seen actively phagocyting bacteria and cellular debris. It is considered that they are particularly prominent in the body reactions to kala azar, trypanosomiasis, typhus fever, Oroya fever, Rocky Mountain spotted fever, trench fever and measles.

In certain infections the phagocytic activity of cells of this type becomes evident. They may be seen increased in size and number with their cytoplasm laden with phagocyted material. The presence of such phagocytic cells in the blood stream is known as histiocytosis and has been reported in typhoid fever, endocarditis, typhus fever and smallpox. Certain workers hold that these cells represent the type cell in some leukemias.

Finally, the cells of this group probably form a certain group of rare tumors, variously termed reticulum cell sarcoma and endothelioma. The absolute proof of this participation in tumor formation is still wanting.

One other activity of the cells of this group is of general interest. In various clinical states characterized by a hypercholesterolemia, such as starvation or diabetes, they may become filled with lipoid material. The local disposition of masses of these cells give rise to the yellowish skin tumors called xanthoma, so often seen in diabetes.

SUMMARY

The reticulo-endothelial system is an organization of cells grouped together because of a common function, that of phagocytosis. It is made up of cells of somewhat similar morphology and possibly a common origin found in lymphoid tissue, spleen, liver, bone marrow and connective tissue.

The function of this cell group is a very important one. It has to do with blood formation and destruction and with the formation of the bile pigments. It is active in combating infection, locally by phagocytosis and generally by the formation of antibodies. It reacts specifically to certain infections and takes part in processes of inflammation and repair. It has an ill-determined relation to disordered lipoid metabolism. Finally, there is a possibility that it may form tumors.

ASSAILS "STOP WATCH" EDUCATION

"Stop watch" methods in the promotion of educational efficiency in the schools are severely condemned as detrimental to the mental health of the child by Dr. Garry Cleveland Myers of Western Reserve University in the current number of *Mental Hygiene*, quarterly journal of the National Committee for Mental Hygiene. School psychologists with their multiplicity of mental tests, the curriculum expert who adds more and more new things to be learned by the child, textbook writers who build their books for pupils around the stop watch, teachers and supervisors, all come in for drastic criticism in Dr. Myer's discussion of the evils of overemphasis on the time factor in school instruction. "The 'efficiency' movement," says Dr. Myers, "is gathering a momentum that seems to be almost irresistible. The psychiatrist is confronted by concrete evidences. Parents are beginning to express themselves. Within a few years they are going to register a very vigorous protest. But educational writers still are almost wholly on one side. They practically all are speed propagandists, and they are practically the only ones who can correct the difficulty."

"Researches in the learning field are beginning to appear which point to some of the educational expert's fallacies. Although he has been assuming that the way to get speed is to hold the stop watch on the child, he never had available conclusive scientific evidence in support of this assumption. On the contrary, there are now available scientific data which pretty clearly demonstrate its falsity". In substantiation of his claim, Dr. Myers relates the results of a study he has recently made of the subject. It was found, he said, that learning, when accuracy was emphasized, produced greater speed than when speed was emphasized. "The reason that our children work so slowly is because we try to make them work so fast. If emphasis is put upon accuracy and the learner has a comfortable atmosphere in which to work," Dr. Myers states, "speed is sure to follow. Then why all this human torture to the school child only to produce inferior learning products?"

Speed has come to be so highly valued above other considerations, he says, that today schools and teachers are rated largely on the speed with which their pupils can perform on certain standard tests. "Obviously some of the results of this procedure (of mental measurements and achievement standards) have been good. But in the effort to bring the pupil up to the required standard, certain pernicious practices have developed. School experts and teachers have come to assume that the way to get speed in the performance of school-work is to force the child to hurry. So the stop watch has been seized upon as the magic instrument. School supervisors and test experts have trained teachers in the devising of innumerable home-made tests which nearly always are speed measures. There are but few arithmetics, for example, among those that have appeared in the past five or ten years, that do not have time exercises on almost every page. The child recites by the stop watch and he studies by the stop watch. But he doesn't hold the watch. Something certainly happens to the nervous system of a good many children under such conditions which does not promote their physical and mental health.

"The teacher harassed by numerous reminders of the importance of speed, becomes nervous and oversensitive about the passing of each moment while the child is trying to recite orally. She gives most approval, as a rule, to the child when he answers quickly; she betrays annoyance when he pauses. If he breathes twice before he makes reply, he may read in her movements and facial ges-

(Continued on page 91)

A NEW TRACTION FINGER SPLINT*

BY REUBEN B. DAVIDOFF, M.D.

THE treatment of fractures of the phalanges of the fingers offers certain difficulties. The customary throat-stick splint, and splints of a similar nature, while giving satisfactory immobilization, do not permit of the use of traction, often a much desired factor. On the other hand, while traction can be obtained by the use of the banjo splint, this apparatus is exceedingly cumbersome. To obviate these difficulties, the writer has constructed a splint employing the

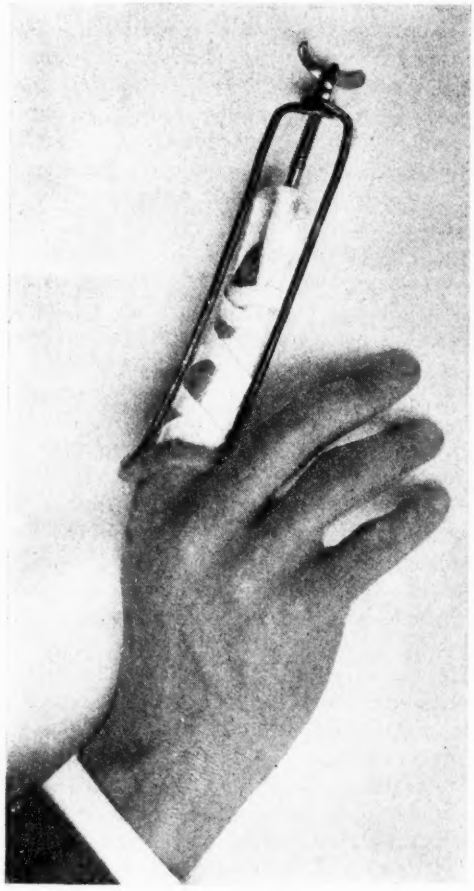

FIGURE 1

principle of the Thomas traction splint, the description of which is the purpose of this article. A search through the readily available literature has failed to disclose any similar use of such an apparatus.

Its employment has proven satisfactory in a limited number of cases. It has certain obvious advantages in so much as it is readily constructed; it is not cumbersome; it is easily and quickly applied and most important, of course, it exerts traction in an efficient manner. The traction is under constant control, and by instructing the patient at the time of the application of the splint as to the amount of traction desired, he can thereafter maintain that degree of tension by means of the turnbuckle adjustment, thereby compensating for any slip or stretch of the adhesive traction straps.

The splint is made of iron wire, easily bent to shape with the aid of a pair of pliers. The

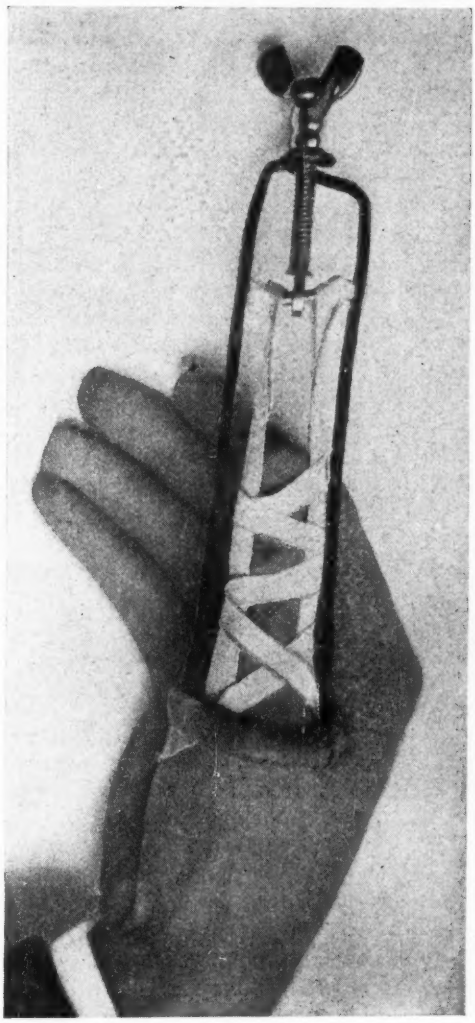

FIGURE 2

base ring is covered with a piece of rubber tubing. The windlass arrangement can be obtained at any hardware shop at a negligible cost. Traction can be exerted either through the use of the regular type of adhesive traction straps, or by boring the finger nail and exerting traction directly through the nail, as has been suggested

in a recent article[1]. Correction of any lateral deviation can be readily corrected by means of appropriate pressure pads.

The illustrations are self-explanatory. In applying the splint to the thumb and mid fingers, the side bars of the apparatus are at the lateral sides of the fingers, while on the other fingers they are anterior and posterior. This is due to the tilt of the base ring so as to make the same splint applicable to all fingers. By enlarging and tilting the base ring, the splint

FIGURE 3

can be used in fractures of the metacarpal of the thumb, especially those close to the carpal-metacarpal articulation, which are so difficult to treat without traction.

A leather finger cot may be drawn over the entire apparatus to make it less conspicuous.

At the present time, no attempt has been made to standardize sizes, so it is necessary to construct each splint to meet the requirements of each individual case, but it seems probable that three graduated sizes of the apparatus should be sufficient to cover all cases.

REFERENCE

1 Mock and Ellis: Treatment of Fractures of the Fingers. Surg., Gyn. and Obst., Oct., 1927, XLV, 551.

UNITED STATES PUBLIC HEALTH SERVICE

Studies in Control of Venereal Diseases

Surgeon General H. S. Cumming of the Public Health Service, in a report submitted to Congress under recent date, has emphasized the wide prevalence of the venereal diseases as shown by recent studies conducted by the Public Health Service. Reports have been collected in a large number of cities from every physician, hospital and other institution showing the number of cases of syphilis and of gonorrhea actually under treatment on a given date. In the cities of 25,000 and more it is found that from one to two per cent. (average 1.5%) of the population is constantly under treatment on account of gonorrhea or syphilis.

This is the first time that information has been available concerning the prevalence of the venereal diseases among the general population. The Surgeon General emphasizes the fact also that there are undoubtedly many cases, particularly of gonorrhea and of latent syphilis, which are not under treatment so that the actual total of cases in these communities would be somewhat greater than the 1.5% shown in these studies by the Public Health Service.

Over a period of many years about 20% of all patients treated by the Public Health Service in its Marine Hospitals have been ill as a result of the venereal diseases. In 1926 this percentage was slightly lower, namely 17%. The Public Health Service collects reports of all communicable diseases from all State boards of health in the country. In the calendar year 1925 the number of cases of syphilis reported exceeded that of any other reportable disease, ranking ahead of measles. Gonorrhea stood fifth with a total of 166,208 cases.

In his report the Surgeon General called attention to the importance of scientific studies which the Public Health Service is conducting in an effort to develop more effective measures of prevention and treatment of the venereal diseass. Because of the exceptional facilities offered in hospitals of the Public Health Service important investigations have been undertaken at the Marine Hospital at Stapleton, Staten Island, New York, and a number of other studies have been initiated in coöperation with leading scientific institutions such as the University of Pennsylvania, and the Johns Hopkins University.

Reports of venereal disease control efforts by State health departments show a great variation between the several states in the efficiency of this work. During the last fiscal year 196,000 cases of syphilis, and 160,000 cases of gonorrhea were reported. Nearly 800,000 doses of the arsphenamines for the treatment of syphilis were distributed by the States. The number of Wassermann tests shows an increase of 25% over the previous year. Venereal disease clinics under the control of the State health departments during the past nine years have given more than 16,000,000 treatments to more than 1,000,000 patients.

The Public Health Service report emphasizes the fact that facilities for treatment of indigent patients with the venereal diseases are most inadequate in the small towns and rural districts.

NEW HAMPSHIRE MEDICAL SOCIETY

UTERINE MALPOSITIONS*

BY GEORGE S. FOSTER, M.D.

UTERINE malpositions probably cause more pain, discomfort and other ills than any other single factor in the lives of women. From the establishment of menstruation to the climacteric and in some instances even years after conditions existing among women should be lessened. Be that as it may along with these advances come the better methods for making a more detailed and correct diagnosis. The laity is better educated to the possibility of such

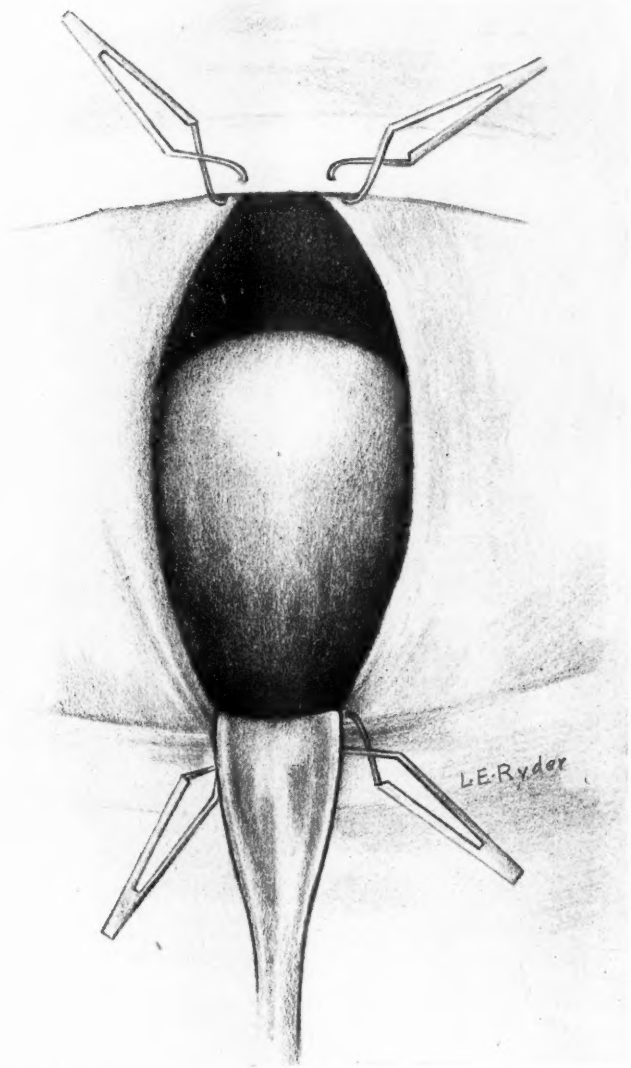

FIGURE 1. The pelvic cavity exposed by a median incision, and the uterus brought up into the field of operation preparatory to being grasped with a thin, four-prong tenaculum, as shown in Figure 2.

this a uterus out of line will have marked influences upon the temperament, comfort and health.

A uterus out of line is probably no more prevalent today than it was a century ago. In fact with modern improved hygienic living and organized health giving games and other organized physical culture teachings such local uterine displacements and seeks advice much earlier. For this reason we surely would expect to discover more of these uterine troubles.

During the past three decades the masses have learned that early relief is possible. Hospitalization has become a factor in the case of all physical ills and for this reason we are better able to correlate these cases. Present-day conditions and the advance in history taking and

*Read at the Annual Meeting at New Castle, June, 1927.

filing of complete records afford us, as a profession, a much better opportunity to study these cases.

Once the diagnosis is made, the method of treating must be selected and if permanent, full relief is to be had in the greater majority of instances, surgical interference is the chosen path.

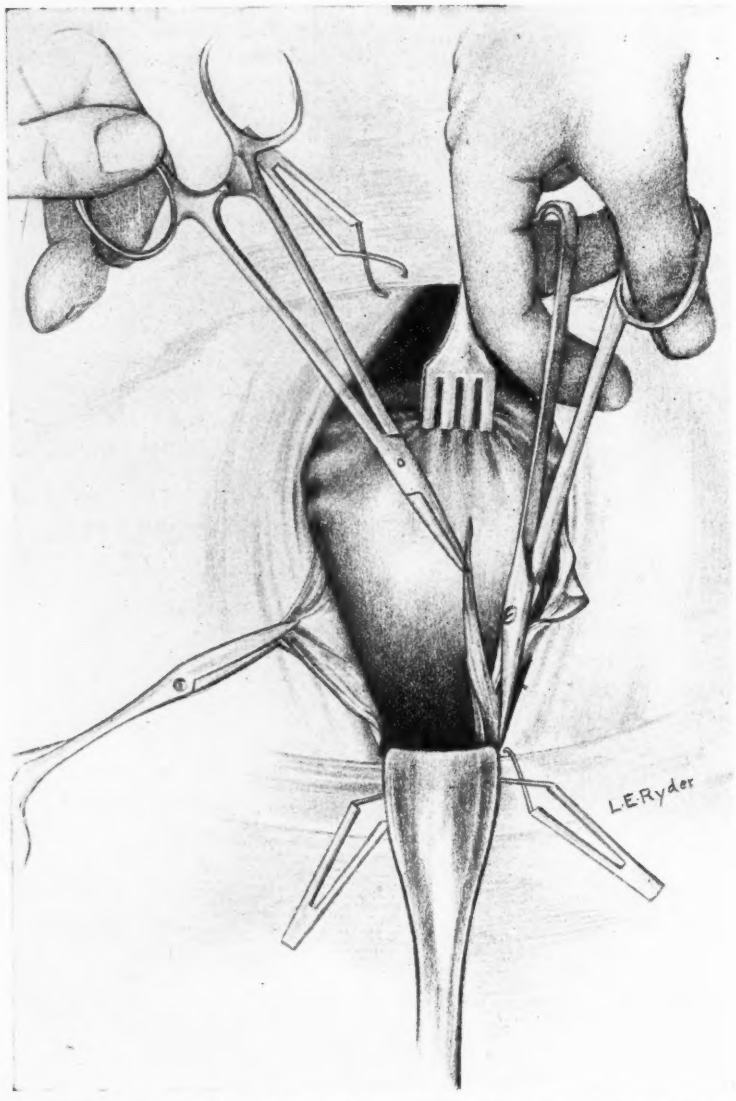

FIGURE 2. The uterus being held in position with a four-pronged tenaculum in the hands of an assistant, the peritoneum is grasped with peritoneal forceps at a point at each side of the abdominal wound, about one and one-half inches above its lower angle. Holding the peritoneal clips in his left hand, the operator then cuts the peritoneum, holding the free end with another pair of operating forceps, from the grasping point outwardly and downward for a distance of about one and one-half inches, the base measuring about one inch. The opposite side is treated in a like manner.

How many times we have known young women attending school with ambition to go ahead and through higher education to make something of themselves, who would suddenly become apathetic and slip in their work because of a persistent backache, occipital headache, dysmenorrhea, extreme nervousness due to spinal plexus pressure, all secondary to a uterus out of line.

Again the young married woman entering upon her household duties suddenly finds that the daily routine becomes a drudgery. She has to go to bed in the middle of the day unable to continue her work because of a weak back, severe headache or a pronounced dysmennorhea secondary to a uterus out of line.

Still further on in the life of women we come across the one who was vigorous and well previous to her first delivery. Since this she has lost weight, has become weak and from a persistent dragging down feeling or back pressure has become an entirely different woman. Here also must be considered the displaced uterus.

To make a correct diagnosis, correct the condition and return these individuals to a self supporting status is a duty staring us squarely in the face. On the other hand if by some well selected method we can return these suffering

girls and women to normal health, this surely is our duty as an organized profession.

Another type of woman we all meet is the married one who desires a family but for some reason cannot become pregnant or if she does, unfortunately miscarries in the third or fourth month. Both of these existing conditions are too often due to a uterine malalignment either of years standing or more recently acquired for one reason or another.

Just a passing review of a normal pelvic condition with its contents will surely augment the emphasis of what a maladjusted uterus means. A normal, fully developed uterus is pear shaped, some three inches long two inches wide and an inch thick, weighing from an ounce to an ounce and a half. This body and the fundus and the cervix are movable, the first being the most free.

The central plan of a normally situated uterus conforms to a line drawn from the tip of the coccyx or near it to the umbilicus. Of course, within normal limits, there is some variation of this but this line serves as the average line.

The uterus is held in position by ligaments, two broad ones, two round ones and also the uterovesical and the uterosacral. These ligaments exert their influence from all sides and in all directions, the principal support of course coming from the broad and round ligaments. Aside from the round ligaments which are most muscular and fibrous the remaining ones are layers and folds of peritoneum and vary much in their ability to serve the purpose for which they were intended. However, under normal conditions the uterus should be held in the central plane previously mentioned as a line drawn from the tip of the coccyx to the umbilicus, and supported so that the tip of the cervix is on a level with the superior point of the symphysis-pubes and in a frontal plane passing through the ischiatic spines.

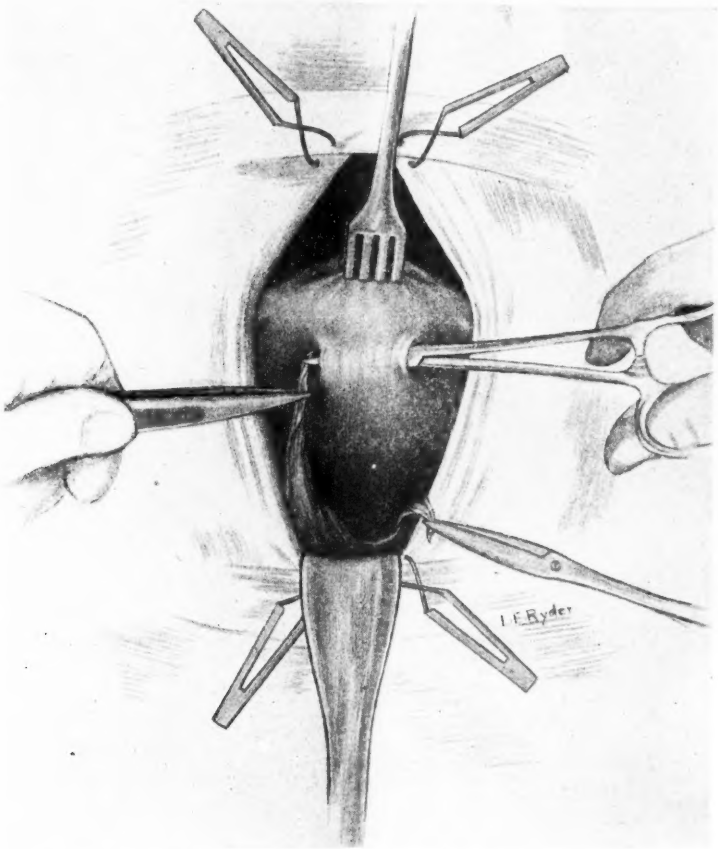

FIGURE 3. The fundus uteri is then pierced with a picked, curved forceps at a depth of a quarter of an inch away on the opposite side. The piercing forceps then releases the forceps grasping the peritoneal band, and draws it back through the opening just made. A similar procedure, but through the first opening, is next made on the opposite side.

Even under normal condition these lines and planes can vary for an over-loaded bladder may push the fundus and body posteriorly or an over-loaded rectum may produce a forward variation.

Normally the mid plane of the uterus is at nearly right angles to the vagina and in a direct plane to the pelvic inlet. On the contrary the vagina of course should be in a direct plane to the pelvic outlet.

This brief resumé of normally anatomical conditions and variations permits us to better consider and more clearly visualize any abnormal condition.

Mal-position of the uterus is generally brought about by the existence of two factors either a relaxation of one or more ligaments or the production of a hernia of the vaginal vault. Of course there are many things which are the causative factors in bringing about these two circumstances and these are too numerous to permit of consideration here.

Relaxation of the ligaments brings about two main displacements, anti-position (either flexion or version) and retro-position (either flexion or version). Of course a lateral tilting may also co-exist but does not produce the same marked signs and symptoms as the former two and is therefore nearly always merely a secondary factor.

With the anti-posed uterus we get signs and symptoms referable principally to the urinary bladder such as vesical frequency, tenesmus, at times retention and a persistent bearing-down sensation united about the bladder.

Over a long period we find developing a chronic cystitis as shown by the urinalysis and symptoms referable to the urethra such as a burning and smarting micturition. The bladder wall becomes folded upon itself and sacs form within which collect pools of urine which undergo chemical disintegration. As a result we later find a pronounced infective cystitis supplementing the mechanical and chemical cystitis.

With the retro-postures of the uterus we find rather a different syndrome, persistent dull backache, marked constipation with the result, many times of obstipation, marked persistent occipital headache, apathy and interfered circulation resulting in skin papules and pustules.

Jointly with both the ante and retro postures we get marked dysmenorrhea, limited menstrual flow, delayed menstruation, irregularity of menstruation and a secondary endometritis or endocervicitis resulting in most disagreeable leukorrhea. Also we may have a phlebectasis of the broad ligaments and more closely associated with the retro-postures, a chain of nervous symptoms resulting in a varying degree of neuroses which very greatly invalidize and incapacitate the patient.

In adolescence how often we meet those cases of delayed maturity not referable to any endocrine cause but merely a mechanical feature of a malposed uterus! This should cause an immediate search for relief for the unfortunate girl.

Occasionally there is seen in the multipara, hernia of the vaginal vault with its resultant

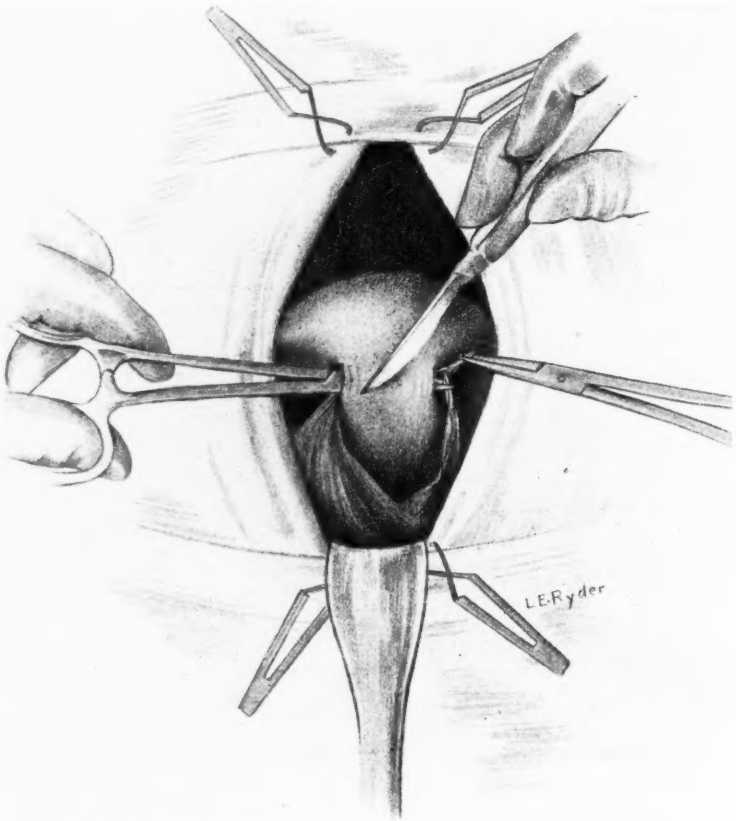

FIGURE 4. The free ends of the peritoneal bands held by the two forceps are then pulled tight in opposite directions until the uterus is raised to the proper position. The edge of a scalpel is then drawn sidewise for about one-half inch between the two openings already made in the uterus, in order that the surface may be denuded, and the peritoneal bands become fixed as seen in Figure 5.

partial or complete procidentia. Here we find co-existing not the relaxed ligaments but the over-stretched ligaments secondary to the long standing chronic weight dragging from below. Here we find the vaginal vault partially or completely herniated and the uterine ligaments so stretched as to give a threadlike appearance or, if of peritoneal folds, the tissue is of the consistency of paper.

With this condition present we get practically all of the previous signs and symptoms present. Here we find the head of a large family more or less invalidized and in many instances quite unable to perform the ordinary duties of the household. This in itself from an economic point of view means very much to a family.

We as a medical profession are morally bound to do all in our power not only to relieve but to cure these various pathological conditions and return the unfortunate victims to normal health. No field offers a wider range of service and an execution of professional judgment. To return these younger and older women to a life of good health and happiness is fully compensated by the personal gratitude shown by the patient and the satisfaction which naturally is ours in the accomplishment.

With this end in view some decade or more ago we devised a systematic method of ventral suspension which, in the great majority of cases, resulting in more or less complete relief. In some cases additional surgical interference has been necessary because of the diseased uterine adenexia or co-existing tears in the vaginal floor

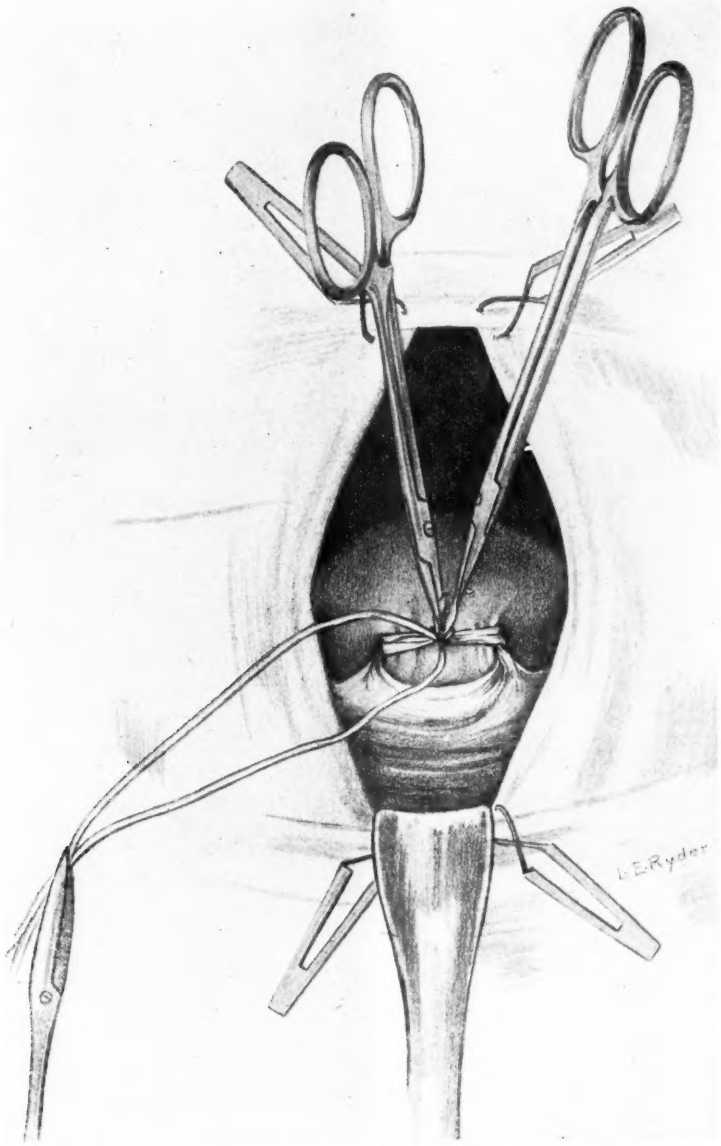

FIGURE 5. The points of the piercing forceps having been brought together by the assistant, the operator ties them firmly with No. 2 Chromic catgut. The piercing forceps are then released, leaving the improvised peritoneal ligaments resting firmly down on the denuded area of the fundus and tied together.

or vault which were, of course, attended to at the same sitting.

Over this period of time we have systematically followed up the cases by periodical questionnaires and repeated subsequent observation and examination. From the files we have taken, without selection, one hundred cases in which this operation has been done. By checking up on the returned filled out questionnaires of these cases we find that ninety-two of them have reported. Of these ninety-two cases eighty-six cases report that they are perfectly well and not bothered with the previous signs and symptoms. Of the remaining six cases four replied that menstruation was normal but they mentioned some dull pain in the lower abdomen at different times. Of these, two mentioned also leukorrhea being present, one mentioned constipation and one had an occasional burning and smarting micturition. The two remaining cases showed improvement in menses but they had much pain in the lower abdomen and could not do a good day's work. They also complained of getting tired out easily.

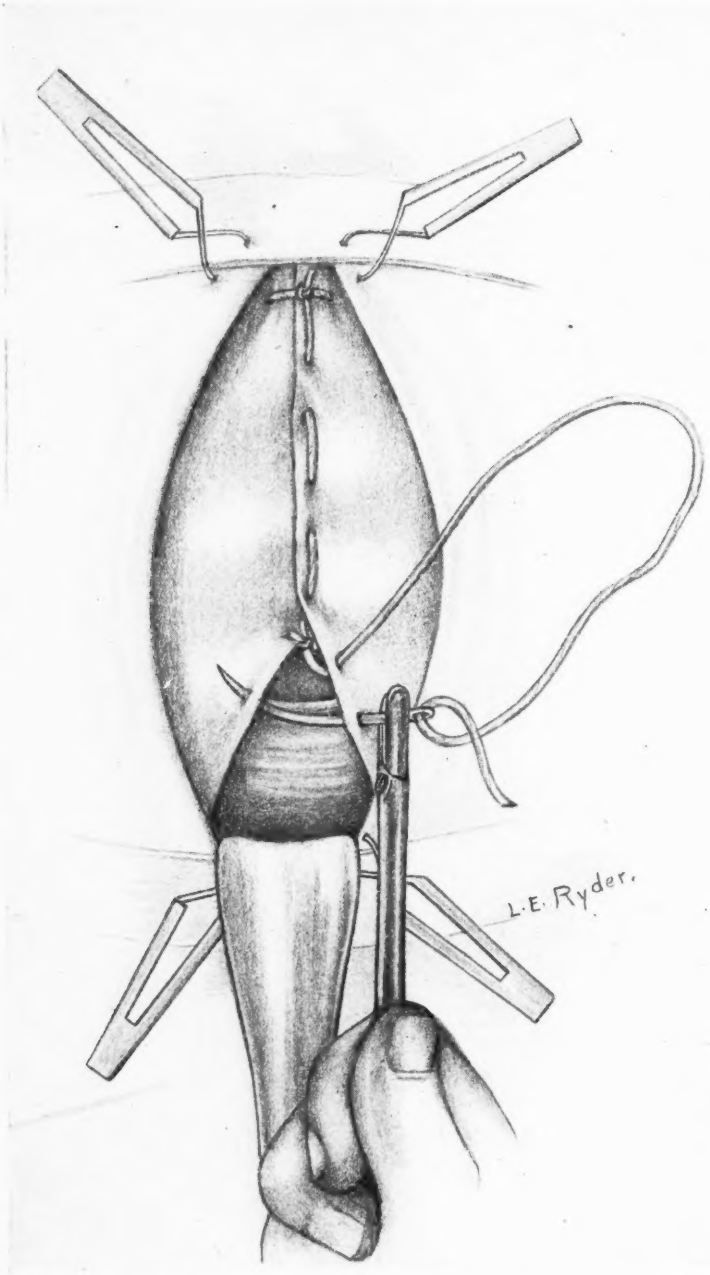

FIGURE 6. Shows method of closing peritoneum.

OPERATIVE TECHNIQUE

The technique of this operation is as follows:—a moderate, median line incision is made and the pelvic cavity carefully explored. The fundus of the uterus is then delivered and

grasped in tenaculum forceps. With fine, pointed hemostats the peritoneum edges are grasped on each side of the wound at a point two inches above the lower angle. With scissors an angular improvised ligament is then made on each side, the hemostatic grasp forming the apex of this angle and the base being toward the pubes. When these improvised ligaments are established the hemostats are permitted to drop on their respective sides thus holding these ligaments to one side. With a pair of fine, picked hemostats the anterior wall of the fundus of the uterus is pierced from left to right forming a tunnel about three-quarters of an inch in length. As the point of these hemostats emerge on the right side, the grasping blades are separated and an assistant places the angle of the right improvised ligament between these blades which are then closed and this improvised ligament is drawn through the tunnel, reappearing on the left with hemostat serving as an anchor. The assistant then passes a similar hemostat through the tunnel from right to left and the blades are separated to grasp the left improvised ligament at its angle and in the same manner as the right ligament it is drawn through the tunnel from left to right. With a sharp scalpel the endothelium of the peritoneal covering of the fundus uteri between these two ligaments is lightly scraped away for the purpose of producing a raw surface over an area some half inch in diameter. The angular ends of the ligaments are then brought together outside of and anterior to the tunnel and tied together with a ligature of No. 1 Chromic catgut. The ligament hemostats are then removed and the free ends of the ligature anchored with a hemostat. The uterus will then be found to be held in a slightly anterior posture. The abdominal wound is then closed in the usual manner except that the catgut suture closing the peritoneum is tied to the free ends of the ligament ligature and all free catgut ends cut. As time goes by the improvised, peritoneal ligament organizes and stretches to about one to one and a half inches in length thus permitting the uterus to regain normal posture.

This operation has given very satisfactory results in returning these suffering women to good health. In not a few instances some of these women have subsequently become pregnant and made normal and relatively comfortable deliveries. In a few cases multiple deliveries have been recorded. This in itself would go to support the worth of this operation, to say nothing of the relief afforded from the signs and symptoms complained of previous to the operation.

Discussion

Dr. Clifton S. Abbott, Laconia: Dr. Foster has given us a most interesting paper. He has beautifully described a very ingenious operation, which has given him wonderfully good results.

The subject is a timely one, for there is a confusion of ideas or difference of opinion in regard to the management of these cases. Many deny that uterine displacement of itself causes symptoms or needs treatment. This view has been accepted to such an extent, that the pendulum has swung too far toward the non-operative side, resulting in the neglect of many cases that need surgery. From a causative point of view uterine displacement can be divided into four classes. First, congenital, found in young single, or sterile married women. The uterus is small and freely movable. This is a symptom of underdevelopment and is usually associated with other symptoms of the same, as general abdominal ptosis, separation of the rectus, statis back, weak sacroiliacs and flat feet. In these cases the uterine displacement has but little to do in producing disability. The deduction is that when a uterine displacement is found in a young nulliparous woman a most searching examination for other trouble should be made before operating for uterine displacement.

The second class, which is the largest is due to the trauma of childbirth. The treatment is surgery. These cases usually have complications in addition to the displacement. The correction of the displacement is only a portion of a general repair job, but an important one, for if omitted the patient is not cured. The third class comprises those cases caused by the contracture of adhesions due to pelvic inflammatory disease as pyosalpinx, ruptured cysts and appendicitis. The fourth class is caused by the weight or pressure of tumors. The treatment of these cases is obviously surgical.

In borderline cases, where one is not certain whether to operate or not, doubt can be cleared up by the use of a pessary. If the pessary gives relief an operation will also without the disagreeable features associated with wearing a pessary.

In considering the treatment of uterine displacement, one is impressed at once by the large number of operations designed to accomplish the same thing. This shows that *none* are satisfactory in all cases or to all operators. Generally speaking one can remember that it requires but little force to hold a uterus in place if correctly applied, for the intra-abdominal pressure is a great aid in maintaining position.

No operation should be done that will leave bands or pockets that could cause an intestinal obstruction.

Our own preference for some time has been for the following procedures: Simpson-Montgomery subperitoneal transplantation of the round ligaments, or Webster-Baldi posterior implantation of the round ligaments. In cases of large heavy uteri where pregnancy is not a factor hysterectomy with implantation of round and broad ligaments into cervix or vagina has given us better results than any suspension or

fixation. In the prolapse of old women the Watkins Interposition has proven very satisfactory.

Dr. John Deitch, Manchester: As only an occasional operator, I feel the need of stressing the fact that the percentage of successful operative results in the case of the busy surgeon are always high, while only too often the reverse is true in the case of a "physician and surgeon" who does but a few cases during the year. And with good reason! The busy surgeon with his large number of cases learns to differentiate between pathology and an abnormal condition, while this differentiation is most likely to escape the less experienced one. With this view in mind I would like to consider two forms of uterine mal-positions in two groups of patients.

The first group comprises a large number of nulliparae. Of these we have two types, one with a displaced uterus and without any symptoms; a patient of this type usually comes to the physician to consult him about sterility; the other one is one that has a mal-posed uterus associated with the subjective symptoms as outlined by Dr. Foster, such as backache, dysmenorrhea, nervousness, etc.

One finds that in either type of this particular group of patients the anterior vaginal wall is short, the cervix is low down in the vagina and the fundus of the uterus is tipped considerably backwards. In these cases one should always have in mind a condition of congenital laxation of the pelvic organs, a condition of infantilism which may exist in an otherwise perfectly developed individual.

An attempt to reconstruct the position of the uterus in this group of patients through an abdominal operation with the idea of relieving symptoms or overcoming sterility is very often likely to result in failure. In doing so, one is attempting to change what is a normally placed uterus in these particular individuals to a pathological position; the patient after such an operation is much worse off than before the operation.

The other form of mal-position that I want to consider is found in a large number of multiparous patients after menopause. Here again we may find a train of symptoms incident to menopause changes and with the mal-posed uterus the temptation is very strong to suggest operative procedures as a means of relieving the patient of her symptoms, but one should bear in mind that at this period the position of the uterus in retro-version is physiologic and not pathologic The musculature and the tone of the uterus aid in the support of the uterus in its normal anatomical position. A uterus which has born several children loses a good deal of its musculature and naturally its tone is lost and it recedes backwards. But for the fact that the uterus is small and light in this age, it seldom retroverts to such an extent as to become responsible for all untoward symptoms.

In any form of uterine mal-position where a pathological condition is definitely established the suspension operation through the abdominal route is considered by many authorities the operation of choice. Whatever method is to be used it should

First, tend to restore the uterus to its normal position.

Second, it should be compatible with pregnancy as the individual case may require.

Third, should pregnancy occur the suspension should still retain the uterus in its normal position after involution, and

Fourth, the suspension should be strong enough to hold up a moderately relaxed pelvic floor.

I do not include here the cases with marked prolapse which may also require an additional operation by the vaginal route.

There are many methods used by eminent surgeons and gynecologists for this purpose. The method adopted by Dr. Foster and which I have the privilege of being familiar with is one of great merit. But it is by no means the ideal one in every case. The operation is short, the technique is simple. It is compatible with pregnancy, and the results are gratifying in the majority of cases, but in obese patients where the peritoneum is often found to be very thin and infiltrated with much fat, or in patients with much pelvic congestion, where the uterus is large and heavy, or in patients with a moderate prolapse, in my opinion, improvised peritoneal ligaments are not conceivably competent. I believe therefore, there ought not to be one method for all types of cases of mal-posed uteri but a method for different types of cases.

Dr. Foster: I think we have previously discussed this subject as to the influences regarding this thing and that. What we have produced here is an illustration of satisfactory end results. I do not think we can cure all the pains, nor do I think the surgery in these cases should be expected to immunize patients for life against all other ills. I am reminded of the story of a physician who was attending a medical meeting and heard a paper about somebody who cured all women while attending them in childbirth. This physician was asked to discuss the paper. He arose and among the things he stated was that he had, "never heard of such a remarkable physician as one who when he entered the sick room he had one patient and when he came out he had two." Perhaps our efforts, in every instance, will not cause our patients to respond to our service. We get patients, and in treating them we may fail and they pass on to another member of our profession. We do not hear so much about this factor in the practice yet it happens to us all if we live long enough. The majority, I think, do get relief and we certainly do not fall short in our endeavor to fulfill our agreement, win or lose.

DR. F. E. CLOW: I believe that one of the important factors in the cause of this condition is the indulgence in strenuous athletics at the menstrual period. Athletic directors are doing a real harm in allowing young girls, at a time when the uterus is engorged and heavy, to participate in sports. It has been demonstrated beyond a doubt that permanent damage has been done in situations of this character. I think that the statement that surgery is indicated in post partum malposition is too radical. The obstetrician is not doing his best for his patient when he allows her to leave the hospital without final examination and the insertion of a pessary when indicated.

THE PHYSICIAN OF THE FUTURE*

BY GEORGE S. EMERSON, M.D.

IN this short paper I do not expect to bring anything new to you, but to call your attention to some things to which we, as physicians, do not give enough thought.

The question is often asked "What is to become of the physician of the future?" What is to become of that vast body of men who are doing everything in their power to make their services required less and less in the treatment of disease? What is their work in the future to be, and how shall they be paid?

Preventive medicine is coming to the front more and more every year, and with the vast number of vaccines, serums and antitoxines which are being used not only to prevent disease, but to make them less severe and of shorter duration, it is little wonder that thoughtful physicians are beginning to ask themselves, Will there be any work for them in the future when preventive medicine shall have reached that stage of perfection where epidemics of contagions shall cease, and the long-continued fevers become so scarce that they can no longer be depended on to furnish any part of their living. This, to some, may seem a long way in the future, but the time is already at hand when such diseases as smallpox and typhoid fever have become so scarce that the ordinary physician rarely ever sees a case of either and they can no longer be depended on to furnish them any part of their yearly work.

Twenty-five or fifty years ago, at this season of the year, typhoid fever furnished the physician with the major part of his practice.

Diphtheria is another disease which is fast joining these other two. The Health Commissioner of New York City has as his slogan—"A State free from Diphtheria by 1930." This they expect to accomplish by preventive methods, the Schick test and the toxin-antitoxin treatment.

The American Child Health Association at its annual meeting goes even farther and passed resolutions to the effect that it is even possible to eliminate diphtheria from the whole United States in a few years.

Scarlet Fever is receiving a good deal of attention and the time is not far distant when we shall see far fewer cases of this disease than we do at the present time.

Serums for pneumonia in the past have been disappointing, but new ones are being worked upon continually and one will eventually be perfected which will largely prevent this disease, and in those cases in which it does occur it will modify its course and make it much less severe and fatal.

Whether we are enthusiastic about the bacterin treatment as a preventive of colds, influenza, etc., we find that those who have taken the treatment are the ones who return year after year for a renewal of it, and eventually we shall have fewer colds to treat.

The Hay Fever victims do not have to look forward any longer with dread to their annual summer or autumn attacks, for with the new methods they can be desensitized to the pollen to which they are susceptible, and the attacks be warded off.

We all know of the work which has been done by physicians to eliminate malaria, yellow fever, the hookworm disease, and others which might be mentioned, but enough has already been presented to indicate the present trend of preventive medicine.

We also have many indirect preventive methods beginning with the prenatal care of the mother to make the confinement safer for both the mother and child. The State, through the Sheppard-Towner Bill, would willingly look after this part of our work for us, if it were possible for it to do so.

We have the baby clinics where mothers are taught how to care for, clothe and feed their babies; they are also told what to do in all the little ailments to which the babies are subject.

Both the State and the government are flooding the mails with literature on both these subjects, and many mothers and prospective mothers are looking to such sources for information.

We are beginning to have the pre-school clinics where the children are examined with a view to detecting any physical defects and advice given the parents as to the proper methods to correct same.

Then there is the frequent examination by the school physician and a school nurse. The examinations extend all through the child's school life, where they check up on anything which

*Read at the Annual Meeting of the New Hampshire Medical Society at New Castle, June, 1927.

has developed since the pre-school examination or which has not been attended to since that examination.

We have our tuberculosis clinic where the State takes over the care and treatment of all cases which apply to, or are referred to them.

We have clinics for almost every conceivable disease to which children or adults are subject. And as such preventive methods are perfected more and more, as they will be in the future, we may well ask ourselves what there will be left for the average physician to do.

We will mention only two solutions which have been advanced to provide for the physicians of the future.

The first is State Medicine, where every physician is employed by the State at a fixed salary, and assigned to a certain territory, or district, or town, and will be expected to care for the locality assigned to him. Not all physicians would receive the same salary, but it would depend to some extent upon the amount and kind of work they were expected to do.

Some writers predict that State medicine will be adopted during the lifetime of many of us. To those of us who have practiced independently for a number of years under the present system, State medicine does not appeal. If it ever gains any headway among physicians, it will be through recent graduates who wish to be assured of a living from the start.

Much the better solution is, for every physician to accept the changes in medical practice as they appear, to realize that an evolution has taken place and is to take place in the future and to qualify himself to meet these changes.

We should be just as resourceful in practicing preventive medicine, as we have been in the past in treating the diseases under our care. We should not allow the State or the government to take over any work which properly belongs to us through lack of efficiency or initiative on our part. The average physician should be better qualified to give the expectant mother that intelligent care and attention which is necessary to enable her to pass safely through her pregnancy and confinement than she can possibly obtain through reading any number of pamphlets or bulletins, for the physician comes in personal contact with those under his care and knows their physical condition and their individual needs. We should in every way encourage these women to consult their physicians regularly and the routine examination, instructions as to diet, clothing, exercise, fresh air, personal hygiene, etc., should all receive special attention. The physician who is to care for and be responsible for the mother at the time of confinement has every reason to expect that mother to place herself in his care long before the date of confinement and as the years go by the physician will have more and more of this work to do as there is no other method by which the desired results can be accomplished.

The public is coming to believe that for every disease which has affected mankind in the past, there is a serum or anti-toxin. Now we know that some of these remedies are very valuable, both as preventive and curative agents. We also know that many of the new serums which are being placed on the market are not only useless, but very expensive. During the next few years many new serums and vaccines will be advocated by their manufacturers. We should inform ourselves as early as possible as to the value of each, that we may intelligently advise those dependent upon us as to their use.

Periodic Health Examinations offer the best prospect for the future income of the doctor.

The public is beginning to realize that it is much better and easier to keep well than it is to regain health after it has been impaired. It is also beginning to know that the way to do this is to be examined at stated intervals by one's physician.

We, as physicians, should realize that much of our work in the future will be along these lines and we should encourage it and should prepare ourselves to do this work in a thoroughly systematic manner. We should perfect ourselves in normal conditions, that we can more readily discover any departure from the same. These examinations should include every member of the family, and a record of each one examined be carefully kept. These examinations which bring the physician into close touch with his families will do more to restore the relations which formerly existed between the family physician and his patients than any method which has ever been suggested.

In the past, the physician's whole duty has been to cure the sick after some disease had gained a foothold, the successful physician being the one who was the most skillful in diagnosis and treatment.

Physicians in the future, with the best reputations, will be those who possess the ability to forestall and steer their patients away from sickness,—and as time goes on, they will become more expert in these respects.

The physician's income depended,—and to a large extent still depends,—upon the number of visits he made during the year to those who were actually sick. This system is a hardship to the family, who at the time of illness can least afford the expense of the physician's services.

When preventive medicine was unknown, this system of paying the physician only when his services were needed, was really the only basis on which to judge of his worth.

In the future, the public is going to think more and more of how to live, and how to keep well, and will more willingly pay physicians for advice on these subjects than they have in the past for treating their illnesses.

Physicians have had to have a broad general knowledge of diseases and the best methods of treating them. In the future, they will be

expected to have this same knowledge and in addition will have to know all the latest and best methods of preventive treatment and be equipped to recommend and apply them.

The work of the physician in the future will not be diminished by preventive medicine, but will be constantly increased and his scope of usefulness broadened. His financial reward will depend, as it does now, upon his ability to successfully care for the people in the locality which he serves.

Discussion

A Member: Preventive medicine is our child, and I think we should be careful that we keep that child within bounds. A statement in the Medical Journal said, "It might have been expected to happen sooner or later." We are in receipt of a letter addressed to the physicians of Newark enclosing an estimate of cost of establishing, in New York City, an Institute to furnish instruction along the lines outlined by Dr. Emerson. Nothing was said about the charge for the service. It ought not to be necessary to warn physicians against some of the practices. The laborer is worthy of his hire, and the examiner should not have to share it with any minor organization; I think we should enter upon the work of periodic examinations and keep our child under control.

Dr. Wilkins, Manchester: This paper by Dr. Emerson is certainly a very thoughtful one, and certainly of interest to all of us. We must recognize the changed conditions, as Dr. Emerson says. I think the reason for appearance of the institutes and the various things of that sort which have been mentioned, is due to the inertia of the members of the medical profession itself. When the patient goes to the physician and asks for treatment, and the doctor says "You are all right", the patient is not getting coöperation. That condition has existed, but it should not. I think we should take upon ourselves the practice of health examinations and illustrate the system by our own adoption of it.

THE APPOINTMENT OF DR. JOHN J. TOPHAM

It is announced that Dr. John J. Topham of South Berwick, Me., will occupy the position of university physician in the University of New Hampshire at Durham. He is to succeed Dr. Nathan Griffin, who died about a year ago. Dr. Topham has practised in South Berwick for the past seven years. He is a graduate of the University of Maine, where he did his pre-medical work, while he secured his degree of doctor of medicine from the Bowdoin School of Medicine. During the World War he served in the Medical Corps of the United States Army as a first lieutenant.

ASSAILS "STOP WATCH" EDUCATION

(Continued from page 78)

tures grave discomfiture in the meantime, up go the hands of many of the child's classmates. They are vying for attention. They are wishing that the child attempting to recite may fail, so that as he fails, they may be allowed to demonstrate their excellence. Upon the fallen body of their comrade do they climb to win approval. But the reciting pupil, rather than have them profit by his seeming loss, ventures some reply; if he does not know he guesses. When the modern schoolroom is running at its 'best', as approved by many a supervisor, it is at its worst from the standpoint of mental hygiene, from the angle of efficiency of learning. Be it remembered that any child learns best when he is most nearly comfortable. Obviously, too, the modern mania for speeding furthers intellectual dishonesty and impairs the pupil's personality."

After expressing hope in the "progressive education" movement now under way and some improvements in educational practice that have already resulted, Dr. Myers advances the following suggestions as specific remedies for the situation described:

1. First recognize that the most effective learning presupposes a comfortable learner.
2. Let the educational testers call a halt to their testing program. Some of them should be given a leave of absence with pay for a year or two until the teachers and their children have an opportunity to quiet down.
3. Remove all speed suggestions from the schoolroom. Assemble all the stop watches of the school except those used for experimental purposes, and have them annihilated. Persuade the writers of textbooks to cease to put timed lessons in the pupils' books. Substitute accuracy and calm for carelessness and haste.
4. Let supervisory schemes be simplified. Let the supervisor cease to be a peddler of pet methods and become, instead, a salesman of the psychology of learning. Let her purpose be to study how the pupil learns and to inspire her teacher also to study him from this point of view.
5. Let more be done to relieve the teacher of unnecessary work and to encourage her to introduce more human touches into her teaching. Let her be given guidance and materials that will enable her to reach the individual pupil. The development of individual-instruction exercises for self-teaching are in the right direction, for in addition to relieving the teacher of much drudgery, they allow the pupil to progress at his own speed and show him how to teach himself.
6. Let those responsible for the curriculum lessen the number of specific facts and skills which the average child is supposed to master in a given time. Let there be considerable cutting down of the requirements for the slower pupil. All along the line, from the first grade through to the university, there should be more differentiation, so that instead of one diploma for each high school and college there shall be several, each of which shall stand for a very definite accomplishment defined thereon.
7. Let educational experts and school officials confer more frequently with parents to discover how they feel about the curriculum and methods of the modern school. Let school authorities more often seek advice of clinical psychologists and psychiatrists who are now dealing with the many cases that come from among school children and school teachers.
8. To the school psychologist add the school neuropsychiatrist who will check up on the mental health of school children and teachers and advise the school authorities as to methods and curricula in terms of mental hygiene. And, of course, no school system can consider itself as furthering a good program of mental health without an adequate force of visiting school nurses. Certainly many a child and many a teacher could, by a saner program, be saved from the mounting scrap heap of human wreckage.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 14021

THREE WEEKS' DYSPNEA, WEAKNESS AND COUGH

MEDICAL DEPARTMENT

First admission. An American advertising solicitor sixty-three years old entered March 30.

For three weeks he had been getting short of breath, had felt weak and had had dry cough. His legs and ankles had swelled. For the past few nights he had had to get up and sit in a chair in order to breathe. He was much troubled with gas on the stomach, which always gave him a sense of suffocation. He urinated once or twice at night.

His family history is unimportant.

He had gonorrhea once when he was young. He had rheumatic fever (?) at twenty-three. For the past forty years he had been well until the autumn before admission. Then he had "grippe" with slow recovery. In January he had a cold which persisted several weeks.

Clinical examination showed a poorly developed and nourished man breathing rapidly. Mucous membranes pale and slightly cyanotic. Right lateral scoliosis with marked prominence of the chest on the left in front. A forcible apex impulse was diffusely felt in the fifth and sixth spaces. Left border of dullness 16 centimeters from midsternum, 5.5 centimeters outside the nipple line. Right border 1 centimeter from midsternum (chest deformed). No increase in retrosternal dullness. Rhythm regular. Sounds of fair quality. Over the aortic area was a rough systolic murmur transmitted towards the base of the neck. Aortic second sound sharply accentuated. Pulses irregular, of fair quality. Artery walls showed marked fibrous and calcareous thickening and tortuosity. Systolic blood pressure 150. Lungs hyperresonant throughout. Poor expansion. Breath sounds prolonged on expiration. Voice and fremitus negative. Abdomen distended, rather tense, tympanitic. No masses or tenderness made out except over the liver, where there was slight tenderness on deep palpation. Liver dullness from the sixth rib to three fingerbreadths below the costal margin. Edge indefinitely felt. Brawny edema of both ankles. Pupils equal, irregular, reacted sluggishly. Reflexes normal.

Amount of urine normal, specific gravity 1.012 to 1.026, the slightest possible trace to a slight trace of albumin at all of four examinations, granular casts at two, a few with cells adherent. Blood normal.

Temperature 94.9° to 98.1°. Pulse 63 to 95. Respirations normal.

An oculist found the fundi practically normal. The right eye showed a small round pigment spot near the macular region, as if a spot of old choroiditis.

By April 3 the edema was nearly gone and the cardiac signs much better. The patient was having good nights and much less discomfort. He continued to improve. The heart was at times somewhat irregular. April 11 the apex impulse was in the sixth space 15.5 centimeters from midsternum. There was a systolic murmur over the precordia transmitted to the axilla. The aortic murmur was unchanged. April 15 the apex impulse was seen and felt in the anterior axillary line. The action was regular. The sounds remained distant and indistinct except at the apex. The patient was very comfortable. April 20 he was discharged relieved to the Waverley Convalescent Home.

History of interval. After leaving Waverley he felt very well. He went back to work and had no symptoms. May 29, a month later, he again had dyspnea and gastric distress with a sense of suffocation. He also had slight edema. He could not sleep, and had to sit up in a chair most of the time.

Second admission, June 8, six weeks after his discharge.

Clinical examination. (As before except as noted.) Apex impulse of the heart seen and felt diffuse and rather forcible in the fifth, sixth and seventh spaces; best felt in the sixth space as far out as 16 centimeters from midsternum, 6 centimeters outside the nipple line. Rhythm irregular. Rate rapid. Sounds of poor quality. Second sound everywhere faint. Over the left precordia a short high pitched loud systolic murmur transmitted to the axilla. Pulmonic second sound equal to aortic second sound, not accentuated. Pulses of poor quality, small and irregular, less than half the beats reaching the wrist. Moderate lateral excursion of the brachials. Blood pressure 125 systolic. Breath sounds loud. Prolonged expiration. Liver dullness from the fifth space to one inch above the umbilicus, where a rounded tender edge was felt. Feet cyanotic and cold.

Amount of urine normal, specific gravity 1.008 to 1.016, color high at three of six examinations, reaction alkaline once, the slightest possible trace to a very slight trace of albumin at all examinations, hyaline casts at all, with fat at three. Blood: 16,000 to 10,000 leukocytes, polynuclears 73 per cent., hemoglobin 85 per cent.

The patient was found to have failed a great

deal since his previous admission. He had attacks of dyspnea and considerable abdominal distress and nausea. He got some rest with morphia. At the end of a week he began to make some improvement and by June 21 was up with comfort but with resulting slight edema. The lungs continued clear. July 5 he had quite a severe smothering attack, immediately relieved by amyl nitrite. He had numerous slight attacks of dyspnea with slight precordial pain, chiefly at night. The condition grew slowly but steadily worse. By July 23 there were a few fine moist râles at the bases. The heart action was growing steadily weaker. That day he was rather stupid, with Cheyne-Stokes breathing. He was comfortable with small doses of morphia. The pulse became slightly more rapid. There was evidence of a small amount of fluid at both bases posteriorly. July 26 he died.

Discussion

BY RICHARD C. CABOT, M.D.

NOTES ON THE PHYSICAL EXAMINATION

His chest was deformed, so that the record cannot be altogether relied upon.

The apex impulse was sixteen centimeters at first, "fifteen and a half" now. If anybody thinks he can percuss half a centimeter he has a good deal to learn about percussion, I think.

We have a man who comes in for typical cardiac symptoms, the cardiac symptoms of an old man with a weak heart, that is, ordinarily, a man who is suffering from a hypertensive type of cardiac trouble. His past history does not help us, and the physical examination gives evidence of a big heart plus a systolic murmur, plus passive congestion.

Have we any reason to interpret that systolic murmur as evidence of a valvular disease? If it is evidence of valvular disease it has to be evidence of aortic stenosis. If it were that disease we ought to have a palpable thrill, a diminished aortic second sound, neither of which we have, and a characteristic pulse, of which nothing is said. We cannot, therefore, on the data before us make the diagnosis of aortic stenosis, and of course with no diastolic murmur we cannot make the diagnosis of aortic regurgitation. Can we make the diagnosis of mitral disease? No, we cannot. Systolic murmurs alone do not give evidence of mitral disease. It is perfectly possible there was another murmur here which was missed, but we cannot say so. There is the formal possibility of congenital heart disease, which we have no reason to expect. We come back then to what I spoke of in the beginning,—an enlarged heart and nothing else.

That is what we should have said at that time. The chances are that we said "myocarditis," the usual diagnosis at that time in an old man with a weak heart. It is possibly a true diagnosis, but one that we have no physical signs to support. The fact that this trouble came on within quite a short period, a few months, does not argue against its being the chronic disease which I have supposed, nor does his recovery militate against that. Hypertensive heart disease is my opinion up to the time of his going to the convalescent home.

Apparently he can be well so long as he is at rest; he cannot be well so long as he tries to work. He is an advertising solicitor, so presumably he had to walk about and go up and down stairs, which would naturally be too much for a person with his trouble. He comes back in just the same state that he was before. This case presents the wide, deep social problem we are always meeting in this hospital. We do not meet it quite so often now, because we try to anticipate it. If we bring a man into a hospital with a disease like this, give him a pretty expensive treatment, and send him out, we know that he will come back with exactly the same trouble, having undone all the good that was done in the hospital. We think to-day that we ought to try to go a little deeper and try to prevent his undoing all that has been done in the hospital. Even from the most hard-hearted point of view —a pecuniary one—it is a waste to give a man a treatment like this when we know it will be all undone when he goes home.

If the second examination is correct his heart is a little larger than before. Presumably he has auricular fibrillation. They did not make that diagnosis here at the date to which this record refers, but that is what it sounds like.

Lateral excursion of the brachials is what we get with arteriosclerotic arteries. Instead of moving only up and down in their beds they go sidewise because of their tortuosity.

The chief thing that is added by the observation of his second stay in the hospital is evidence tending to make us think of disease in the coronary arteries. He has some pain and he has sudden attacks of distress and dyspnea. Other than that we have no important new facts. The gravity of his urine is somewhat lower, and there are rather more casts, but we still have rather little on which to build any diagnosis of nephritis. We have a rather queer murmur which I feel worried about,—worried for fear we shall make a mess of its diagnosis. But that is all in the way of new facts.

DIFFERENTIAL DIAGNOSIS

Now what can we say? We certainly can say he ought to have arteriosclerosis, a hypertrophied and dilated heart, chronic passive congestion of his lungs and his liver and presumably everywhere else. Beyond that we are not safe in saying anything. But it seems to me rather probable that he had some coronary narrowing, and rather improbable that he had a

complete coronary block. As to the source of his cardiac murmurs, especially this peculiar one described at the second entry, I do not know what to say. That did not point to anything that we can recognize from the basis of previous experience of similar murmurs. Systolic murmurs are the hardest of all murmurs to interpret. Frequently even post mortem we cannot say what they mean. I do not think that on the facts written in this record we are justified in making any further or different diagnosis.

DR. R. R. WHEELER: What is the significance of the fatty casts?

DR. CABOT: I do not think they have any special significance unless they are present in large numbers and continuously. Even then I should not think we could go beyond saying that they may mean something in the way of nephritis. I have seen them a good many times in cases that were proved not to have nephritis, and I do not think anybody to-day can say what their significance is, any more than I think anybody can say to-day much about fat in other organs. We used to worry a good deal more about fat in the liver and in the heart than we do now.

A PHYSICIAN: If you had had a positive Wassermann in the record would you have changed the diagnosis?

DR. CABOT: Perhaps we should have changed it, because we have a little evidence of coronary trouble, and syphilitic aortitis tends, by narrowing the mouths of the coronaries, to bring that about. Yes, I think if there were a positive Wassermann we should have seriously to consider syphilitic aortitis. But we could do nothing more than consider it.

A PHYSICIAN: They do not usually live so long with it, do they?

DR. CABOT: His symptoms have not lasted very long.

DR. WHEELER: It is a very big heart for syphilitic aortitis.

DR. CABOT: Yes, unless he had aortic regurgitation, which he apparently has not got. That is a good point. That is distinctly against it.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Arteriosclerosis.
Myocarditis.
Cardiac hypertrophy and dilatation.
Angina pectoris.
Hydrothorax, slight.
Chronic passive congestion.
Chronic aortic endocarditis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Hypertensive heart disease.
Hypertrophied and dilated heart.
Arteriosclerosis.
Chronic passive congestion, general.

ANATOMIC DIAGNOSES

1. *Primary fatal lesions.*

Arteriosclerosis of the aorta and its great branches.
Chronic adhesive pericarditis.
Fibrocalcareous endocarditis of the aortic and mitral valves.

2. *Secondary or terminal lesions.*

Hypertrophy and dilatation of the heart.
Infarcts of right kidney.
Chronic passive congestion, general.
Hydrothorax, double.
Edema of dependent portions of the trunk.
Compression atelectasis of the lower lobes of the lungs.

3. *Historical landmarks.*

Chronic pleuritis.

DR. TRACY B. MALLORY: The case is simply one of arteriosclerosis and hypertension. The heart was much enlarged, weighing 660 grams. The aortic and mitral valves showed a few little spots of calcification, but no deformities. The left coronary artery showed one patch of calcification which for a very short distance narrowed the lumen of the artery to about one-fourth the normal size. Beyond that area it was perfectly normal. The right coronary was capacious throughout. There was chronic passive congestion, considerable amounts of fluid in both pleural cavities, and some in the abdomen.

One other finding, possibly of significance, was very numerous adhesive bands between the pericardial layers which were described as binding the visceral and parietal layers tightly together. They may possibly have some significance in connection with the murmurs.

The kidneys were a little small, 232 grams, and showed one area of infarction, but were otherwise not essentially abnormal.

CASE 14022

FEAR OF SWALLOWING WATER

SURGICAL AND NEUROLOGICAL DEPARTMENTS

An unoccupied Swede seventy-five years old, formerly a machine-worker, entered the hospital October 5.

Two days before admission after working in the garden he had no appetite for luncheon and said he could not drink water then and had not been able to earlier in the morning. He took a glassful of milk by spoonfuls with much difficulty. He had a feeling of constriction in his throat. That night a doctor applied ice to the chest. This seemed to aggravate the condition. Heat was tried with some relief. The patient did not sleep well. The doctor ascertained that

the patient had never been bitten by a dog, but that six months previously he had been bitten by a cat which had been injured or bitten by a dog. That day the patient took little except two grapes, two tablespoonfuls of orange juice and two tablespoonfuls of water. The morning of admission he ate all of his breakfast, but was horrified at the sight or thought of water. When he was induced to take a little the act threw him into a paroxysm of difficult breathing and great excitement.

His family history is negative.

He had typhoid in his youth. Four years before admission he had a rather severe attack of erysipelas on his face. Otherwise his past history is negative. He occasionally took a little whiskey. Everybody who knew him said that he was a fine old man and was never excitable. He seemed a little unbalanced mentally at the time the history was taken, and said that he had had an attack similar to this before. This his relatives strongly denied.

Clinical examination showed an elderly man lying in bed, obviously in great distress. There were periods of appreciable respiratory embarrassment with a quick catching respiration associated with convulsive seizures of the hands and face and an expression of horror. Over the arms, shoulders, face and back of the neck were long abrased and ecchymotic areas due to scratching. The back of the neck was almost one solid area of ecchymosis. The hands and face were of a dusky hue, especially at periods of struggling. The sight of water or the attempt to drink it were the things that caused the seizures most readily. The teeth were poor. Pyorrhea was present. The chest was barrel shaped. The diaphragm excursions were limited but equal. The pupils were dilated and reacted sluggishly to light. The right was larger than the left. The fundi were negative. The reflexes and the rest of the examination were negative.

Amount of urine normal, specific gravity 1.020, a very slight trace of sugar at both of two examinations, no albumin, sediment negative. Blood: 10,000 to 17,200 leucocytes, 78 per cent. polynuclears, 8 per cent. large mononuclears, many young polynuclears, reds normal in size and shape, well filled with hemoglobin, platelets normal in numbers. Wassermann negative.

Temperature 100° to 103.2°, pulse 65 to 140, respirations normal.

The night of admission the patient was able to take twelve ounces of fluid. The following morning his condition seemed definitely improved, although the nurse said that he had not slept during the night. The ecchymotic areas and scratch marks on his neck were more marked. His ability to swallow water was better and he was less active. At half past ten a lumbar puncture was done through the third lumbar space. 15 cubic centimeters of clear colorless fluid was withdrawn, pressure 110 before jugular compression, 160 after it, pulse and respiratory oscillations normal, cell count 1 small lymphocyte, 3 subarachnoid cells; globulin, ammonium sulphate and alcohol tests negative, sugar 116, chlorides 736, no clot, colloidal gold 1111000000, total protein 33. By noon he again began to show central nervous system irritation, more phobia towards water and a desire to get out of bed. At 3.20 a quarter grain of morphia and three grains of luminal were given, at 4.15 fifteen grains of triple bromides and at 6.20 a quarter grain of morphia.

X-ray examination October 6 showed the lung fields clear. The heart shadow was within normal limits. The supracardiac shadow was not increased, but the aortic knob was very prominent, as seen in arteriosclerosis. The posterior mediastinal space was clear. The diaphragm was smooth and moved freely and equally on both sides with respiration. The costophrenic sinuses were clear. On swallowing the barium no evidence of laryngeal spasm was noted and the opaque mixture passed without interruption to the stomach. No obstruction or spasm was seen. Sufficient barium to outline the stomach satisfactorily could not be given because of the patient's inability to swallow fluids. There was marked increase in the amplitude of the peristaltic waves. During the difficulty in breathing following the ingestion of the barium the diaphragm moved upward and downward more rapidly, but otherwise nothing abnormal was noted.

A laryngologist reported that examination of the throat was essentially negative. He was interested to note that the patient controlled the movements of the tongue with great difficulty; the muscles of the tongue felt spastic. The house officer noted that when he observed the patient the tongue could be protruded in the midline without tremor or difficulty.

Another consultant obtained the additional history that a week or ten days before admission the patient's daughter noticed that he had some respiratory difficulty on going upstairs.

October 6 two consultations were held over the patient. He was thrown into dramatic paroxysms of horror when given anything to drink. Between times he was very alert and somewhat apprehensive but otherwise not abnormal. His pupils were widely dilated. That night he was far more restless than at any time previously,—attempted a number of times to get out of bed and was somewhat irrational. His temperature had gone up to 102.8° by rectum and his pulse—he was somewhat excited—had risen from 80 to 128. He picked at the bed clothes and spat frequently on the floor. 500 cubic centimeters of intravenous glucose was given.

Notes by the nurse. "On the morning of October 6 the patient arrived in the ward at two o'clock acting very queerly, refusing to stay in

bed. At about quarter to three I found the patient out of bed attempting to go downstairs, muttering to himself all he while. When I got him back to bed he was fairly quiet, although he did not sleep. At four o'clock he again attempted to get out of bed. He was very talkative for the rest of the morning. For three hours he kept calling for something which was at last understood to be coffee. At sight of it he foamed at the mouth a little, but he drank it with no apparent difficulty and showed no reaction afterward.

"That night at half past eleven he was making a peculiar noise and attempting to scale the wall. He had a very glassy stare in his eyes and spat at every object in sight. At three o'clock he had two drams of paraldehyde, which gave the desired effect in about half an hour. Then he slept with loud snoring and talking until ten minutes to six, when he had a dejection in bed followed by slight convulsions which lasted approximately twenty minutes. I was in the next room and again heard the peculiar noise, similar to the barking of a dog. I went to investigate and found the patient attempting to climb the wall, scratching his face with his nails, causing it to bleed. He was frothing at the mouth and his breath came in gasps. He still had the same glassy stare in his eyes that I had seen in the morning. These actions lasted for about eight minutes. I left the room to call the supervisor. When I returned the patient had just fallen back on his pillow, apparently exhausted. He turned very cyanotic immediately. His respirations stopped for half a minute. No pulse was obtainable. We turned him on his side. His forehead on one side was perfectly white and he had huge red blotches on his face. He commenced to breathe very rapidly for about three minutes; then his breathing changed to long shallow respirations with absolutely no motion. He was still cyanotic, but was blue and not black as previously. He remained perfectly motionless with absent pulsation and set eyes for ten minutes, from 6.30 to 6.40, when he was discharged to Allen Street."

A lumbar puncture done three hours post mortem gave bloody fluid, sugar 31, chlorides 702. Centrifuged, clear yellow supernatant fluid. Total protein 354.

Discussion

BY HENRY R. VIETS, M.D.,
GEORGE BURGESS MAGRATH, M.D.,
AND WILLIAM A. HINTON, M.D.

Dr. Viets: The first symptoms were difficulty in swallowing and a feeling of constriction in his throat. His physician felt that these symptoms might be due to hydrophobia and therefore inquired about bites from animals. The animal was not a dog, as usual, but a cat. The cat possibly had been bitten by a rabid dog and probably had rabies itself.

The past history states that the patient "was never excitable"—an important point. When he entered the hospital he had periods of great distress and he was highly excitable when provoked by the sight of water. There had been a marked change in his personality, a symptom which was helpful in the diagnosis.

The only important findings in the physical examination were the self-inflicted wounds around the throat and back of the neck, the obvious cyanosis when struggling, the horror and onset of paroxysmal seizures when he thought of or saw water, and the widely dilated pupils.

I should like to ask Dr. Cabot about the blood picture.

Dr. Cabot: It shows nothing but a slight leukocytosis.

Dr. Viets: The spinal fluid was practically negative except for the three subarachnoid cells and the sugar content, which was a little increased above normal. These findings I would not consider as significant. Apparently he was able to swallow the barium with less difficulty than water and although he did not take very much, there was no spasm while it was passing through the pharynx and esophagus. The barium meal test does not throw much light upon the situation and only indicates that the peristaltic waves were decreased; no definite spasm in the esophagus could be made out.

There was apparently a little difference of opinion about the patient's ability to use his tongue.

The nurse made some very careful observations, which are of a great deal of interest.

The spinal fluid sugar, taken post mortem, was 31 mgms. per 100 c.c., a normal count, as compared with 116 mgms. before death. There is no explanation, so far as I know, for the first high sugar content of the spinal fluid. The total protein was ten times normal—354 mgms. per 100 c.c., due to the bloody fluid.

The case does not admit of much differential diagnosis. Obviously the chief symptom was an acute attack of true "hydrophobia", that is, difficulty in swallowing, with the horror and spasm that go with it. One would have to consider, possibly, two other diseases in a differential diagnosis: (1) pseudo-rabies (really hysteria)—much more common when there is a good deal of rabies in the country and somewhat more common, I think, in young people; with this old man, who had been a quiet, easy-going citizen, it should hardly be given more than momentary consideration. It is only fair to state, however, that I think any of us seeing a man, as this man apparently was, quiet, calm, answering questions fairly normally, but who was thrown into a violent spasm by the sight of water or a puff of air blown in his face, might have felt for a time that this patient had a functional nervous disease, hysteria. The other disease in the differential diagnosis is (2) cephalic tetanus, usually due to wounds near the face, in

which there is spasm of the larynx and the jaw. In this disease, however, there is a true spasm, with some permanent rigidity. This patient was quiet and free from his spasm except when provoked by water. There was also no suggestion of a wound, and the onset was too sudden for tetanus. The patient was taken ill and died within three days, which would be unusual in tetanus.

We know that the diagnosis of rabies was confirmed in this case by the finding of Negri bodies such as have been found in practically all human cases and in all cases of animals since 1903, when Negri described the so-called Negri bodies in the brain. I have looked up the cases that we have had in the Massachusetts General Hospital since 1878, and later I will say a word about the diagnosis and frequency of hydrophobia.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Rabies.

ANATOMIC DIAGNOSIS

Jaundice, slight.
Hemorrhage, focal, subcutaneous, of the face, bilateral.
Erosion, scratches, and abrasions of the skin of the back, shoulders, upper arm, forearm, right.
Cicatrices of the hand, left.
Needle marks of the cubital spaces and of the lumbar region.
Passive congestion of the pia arachnoid and of the brain.
Edema of the brain.
Synechiae of the pleura, right.
Sclerosis, focal, slight, of the curtains of the mitral valve and of the cusps of the aortic valve.
Dilatation, slight, of the heart (valve openings).
Endarteritis, chronic, focal, slight, of the coronary arteries.
Passive congestion of the lungs, spleen, liver.
Hemorrhage, perivascular, submucous, of the stomach, slight.
Chronic nephritis (atrophic form).
Cyst of the kidney, right.
Hypertrophy of the prostate with "third lobe" formation.
Dilatation, slight, of the aorta.
Endaortitis, chronic, focal, slight.

HISTOLOGIC DIAGNOSIS

Rabies. Confirmed by animal inoculation.

DR. GEORGE BURGESS MAGRATH: The death of this patient is the fourth from rabies which I have been called on to investigate in twenty years. Jurisdiction I take in death from rabies as in death from tetanus, anthrax, and septicemias in general when due to traumatism, on the ground that they are supposably due to injury. Therefore this death was duly reported by the hospital early in the morning, and the post-mortem was made about eight hours after death. I was very glad to have as my guests Dr. Mallory and some of the staff and Dr. W. A. Hinton, Assistant Director of Biologic Laboratories in the Commonwealth. He is the official diagnostician for the Commonwealth in the matter of suspected rabies in animals, and in three of the four deaths which I have investigated in Massachusetts he has coöperated with me in the matter of diagnosis.

The pathological anatomy is disposed of in very few words. There was post mortem a slight jaundice of the sclerae and a distinct yellowish tinge of the skin. There were present on the sides of the face and neck subcutaneous hemorrhages. There were erosions, scratches, abrasions of the skin of the back, shoulders, and right upper extremity. There were some small scars of the left hand which I do not believe were due to the injury received, which was described as of the right thumb.

Internally this examination was similar to the examinations of the bodies of the three other men who died from rabies. It brought to light nothing that is pathognomonic of rabies. The conditions which are common to all are essentially general ones. There is generally acute passive congestion, in this case exhibited chiefly in the brain and to some extent in the spleen and liver, not so much in the lungs. There was a fair amount of edema of the brain. The brain weighed 1525 grams; it was injected and rather wet, on dissection yielding quite a good deal of fluid. Histologically my examination thus far concerns the general organ pathology. The changes present are those which one might expect to find in the body of a man of this patient's age,—a certain amount of atrophic nephritis, an enlarged prostate. He was for his years a pretty healthy man. I have not as yet studied microscopically the regions of the brain specifically interesting.

Aside from the affirmative histological evidence, animal inoculation is helpful in final diagnosis. It is the elimination of other possible causes of death that assists in arriving at the final determination in case of death from asphyxia, and that is true in the case of death from rabies. In both the blood is fluid; in both there is acute passive congestion and terminal edema.

At the post-mortem parts of the brain, notably segments from the Ammon's horn and cerebullum, were preserved; impressions were made of significant parts by Dr. Hinton, and Dr. Mallory removed the cervical spinal ganglia. I conserve these in instances of suspected rabies because in addition to the changes present in the Gasserian ganglia specific for rabies, the cervical spinal ganglia may show such changes and may contain the Negri bodies.

The conditions present in this case were comparable in all respects with those met with in three post-mortem examinations made by me in 1914, 1921, and 1922. In the case of the other three a fairly definite incubation period of eight weeks appeared in the history, and death took place in about three days—hardly more than that—after the onset of symptoms. In the first instance the injury was dog bite of the hand. The dog was shot, but its body was destroyed without being submitted for diagnosis. In the second instance, a rather tragic one, a man was jumped at by a stray dog, his face slightly scratched, his lip bruised on his own teeth, and he died very abruptly five months afterwards, being received in the hospital after about forty-eight hours of manic excitement. The cell changes present were of the same sort as those in this case, of which Dr. Hinton will speak.

In the third case the incubation period was of nearly six months' duration. The patient in that instance, a policeman, was badly bitten while trying to separate a dog proved rabid from some children. He received treatment very promptly. He was bitten on the third of August. He had three injections the next day and several in the next three or four days, and daily from the tenth of August to the end of the month. There was every reason to suppose that his case was under control. He went to a hospital for treatment of some acute thing—nephritis or something of the sort,—and while there became excited, and was taken to the Psychopathic Hospital, where he died. In his case a positive diagnosis of rabies was made by Dr. Hinton from histological observations and animal inoculation.

DR. LINCOLN DAVIS: Did he have Pasteur treatment?

DR. MAGRATH: He did. The material used at that time came daily from a commercial house in New York,—came on daily packed in ice. I feel sure that for some reason the material in this case was inert. I have no other explanation to offer. The delay, the rather prolonged incubation period, I think gave everyone the idea that he was going to get well. But it came out of a clear sky, and he died within two or three days of the onset of symptoms, with the same post-mortem changes.

DR. CABOT: As to these self-inflicted wounds, have you known of them in other cases?

DR. MAGRATH: No, the other three were without such. There must have been a great deal of thrashing about in the last case. I do not know any reason for it.

DR. HENRY H. FAXON: The family had noticed that there was apparently an itching of the skin complained of even before he came to the hospital.

DR. CABOT: Did he have that itching before he was bitten?

DR. FAXON: No, sir, not so far as we know.

DR. WILLIAM A. HINTON: The only thing I have to say is that the diagnosis was relatively easy and rapidly accomplished in our human cases. It consisted simply of making impressions of the Ammon's horns and the cerebellum and staining them by the appropriate methods. This is a matter of choice. In the three cases under discussion and in two other human cases where the material has been sent to us it was very easy. The last case presented a little more difficulty because some of the Negri bodies were slightly atypical in some of the impressions.

Apart from the immediate diagnosis we always attempt to confirm this by examination of the sections which are fixed in Zenker's fluid and stained by the eosin methylene blue method. The four cases which Dr. Magrath has sent us have differed from the dog cases and the other animals, like cows and horses, in that the ganglia have shown no changes whatsoever except in this case, where there were slight changes,—namely, proliferation of the capsules about the large ganglion cells. This is the best method to use in diagnosing rabies in domestic animals. About seventy per cent. will show positive impressions on sections and the other thirty per cent. are found by examining the ganglia. I rather suspect that these ganglia changes are not found in the human cases because the individual is bitten higher up, for we very seldom find any changes in the case of a rabbit used as a test animal, but we do find numerous Negri bodies. A characteristic feature of the Negri bodies is marked variation in size with a tendency to the occurrence of large bodies, which is in marked contrast to what we find in the rabbit, where the Negri bodies are very small.

In Dr. Magrath's four cases animal inoculation was positive. Two rabbits were inoculated in each instance. In the last case the rabbits died nineteen and twenty-one days, respectively, after inoculation, and showed characteristic Negri bodies. A rabbit may be absolutely well on a given day and the next day it will be found dead without any paralysis or other visible symptoms. One day the rabbit is apparently normal and the next day it will be found dead with numerous Negri bodies in its brain.

DR. CABOT: Dr. Viets, can you add anything on the clinical side?

DR. VIETS: I looked up the records of the hospital and they give us some interesting facts in regard to this disease. We have had, including this case, eight cases of hydrophobia in the Massachusetts General Hospital since about 1870. All have been men. The last case before this one was in 1891, thirty-six years ago. Between 1878, when the first case entered this hospital, and 1891, there were seven cases, varying in age from 17 to 73. The longest duration of any one case in the hospital was four days before death; the shortest, one day. All

HYDROPHOBIA AT THE MASSACHUSETTS GENERAL HOSPITAL

1878-1927

Case No.	Name	Age	Sex	Entered	Died	Duration, hospital	Duration, total	Initial infection	Location
1	C.H.A.	54	Male	1/23/1878	1/24	1 day	4 days	8 mos. Dog?	?
2	I.W.N.	66	Male	9/ 9/1878	9/11	2 days	3 days	7 wks. Cat	Thumb
3	W.R.	17	Male	4/24/1879	4/28	4 days	7 days	5 wks. Injury	Finger
4	G.K.	17	Male	10/ 7/1889	10/ 8	1 day	4 days	3 mos. Dog	Hand
5	W.J.M.	35	Male	4/ 9/1890	4/ 9	1 day	5 days	3 wks. Dog	?
6	W.H.D.	27	Male	2/24/1891	2/25	1 day	2 days	8 wks. Dog	?
7	A.C.	73	Male	3/18/1891	3/20	2 days	3 days	6 wks. Dog	Hand
8		75	Male	10/ 5/1927	10/ 7	2 days	4 days	6 mos. Cat	?

the cases were fatal. The total duration of symptoms in all was less than a week, the longest being seven days and the shortest two days. The initial infection in the eight cases was: in five, dog bite; in one, cat bite; in one, a question of dog bite; and in one, an injury to the hand from a machine, with no animal inoculation known. These figures emphasized also the extraordinary rapidity of the symptoms in cases of hydrophobia. Death occurs within a week after the beginning of the difficulty in swallowing. If we carefully examine, however, the history of some cases, as I did in a case in 1923, we find that premonitory symptoms may precede the difficulty in swallowing for a period of weeks or even months. In my case, a man bitten in January 1923 by his dog did not die until September, over seven months later. At least four months before his death, nevertheless, he began to have symptoms of hyperexcitability, difficulty in controlling himself, and under certain circumstances a great sense of discomfort at a sudden noise or shock of any kind. Blowing air on his face caused him extreme discomfort even three or four months before he died. Negri bodies were found in the brain at post mortem and a picture of them will be found with a report of the case in the *Archives of Neurology and Psychiatry* for June, 1926.

The human cases pass through the stages so well described by Gowers, who wrote a description of this disease, which will be found in his Textbook for 1888. His description, in my opinion, has never been surpassed. Some patients have three definite stages: (1) the premonitory symptoms; (2) the furious stage; and (3) a paralytic stage. In the case presented to-day the patient was at times excited, with quiet periods intervening, and towards his end he was much more quiet, although he did not develop the typical paralysis seen in some of the cases recorded in the hospital here.

DR. CABOT: Have you any record of self-inflicted wounds?

DR. VIETS: In the seven cases mentioned, one patient "clutched his throat"; none caused wounds. The spitting is a very characteristic symptom, described at great length by the house officers in the old records. Delusions of persecution may be present. The patient I saw in 1923 felt, an hour or two before he died, that his wife was unfaithful to him. He also had a horror of all the attendants who looked out for him.

Another point of interest is that almost no drugs have any control over the mania or over the spasms. All the ordinary drugs such as hyoscin, bromides, and paraldehyde give no relief. Heavy doses of morphia are, of course, effective. Occasionally patients with hydrophobia can be fed by approaching them from behind so that they will not see the water or food to be given them.

DR. HINTON: I was going to ask whether the fear is an intellectual one. Do they fear water as such?

DR. VIETS: The patients say that the difficulty is that when they attempt to swallow water the spasm is extremely painful, so they have a horror of the pain of swallowing. This was also the view expressed by Horsley.

DR. EDGAR M. NEPTUNE: It is interesting in this case that the man could take solids quite well, but could not take water.

DR. VIETS: That has been pointed out many times and it is difficult to explain. Of course, cold water may have something to do with it. These patients all object to cold things. Coffee, for instance, this man was able to take without much difficulty. One case in the hospital, years ago, was treated by injections into the arm of saline solution, and a little was spilled on the arm; the shock was uncomfortable and at once threw the man into a spasm.

The question of how these patients are infected is interesting. There have been many descriptions of bizarre cases in the literature. One of the most interesting cases, but tragic, was a man who had tied up a mad dog with a rope. He went to untie the dog, tried to untie the knot with his hands, could not do it, took the knot in his mouth, and contracted rabies. Many people have been infected by animals licking their hands, probably with an abrasion of the skin that they did not realize they had.

DR. YOUNG: Has the organism ever been cultivated?

DR. VIETS: Not definitely; there is a feeling among bacteriologists that the Negri bodies are probably a stage of an infective organism and from the Pasteur Institute in Paris reports have recently been issued intimating that the Negri

body, as we see it in the infected brain, is a spore state of the organism.

DR. YOUNG: Has any work been done on the saliva?

DR. VIETS: In human beings as well as dogs it is highly infective.

DR. LINCOLN DAVIS: This man was under the care of the East Surgical Service in consultation with the Neurological Service and others. I saw him once,—the first case of rabies I ever saw. I have been connected with this hospital since 1898 practically continuously, and I have I think seen almost every interesting case. That is one good thing about this hospital, that we have a chance to see every interesting case. This was the most dramatic and terrible case that I have ever seen. Dr. Porter and I went into his room. The man seemed quite normal and talked perfectly rationally. Then we asked the nurse to give him a drink of water. As she approached with the water his respiration became very rapid, his chest heaved, his pupils dilated, and yet he was willing to make the attempt. He took the water in his hand; his hand began to shake and the water to spill. He finally got it up to his mouth, then pushed the glass away from him and began to clap his hands. Dr. Porter and I both did the same. I turned to Dr. Porter and said, "That seems almost like play-acting. I cannot understand why he should clap afterwards." I felt some doubt as to whether it was the real thing. But some of the gentlemen who came down to see him stayed there for hours—I think Dr. Moss stayed six hours—and these convulsions got worse and worse. He did it a good many times. I don't believe anybody who saw him will ever forget it.

I think we should add that as a result of this case three of our surgical house officers are now taking the Pasteur treatment. Two found abrasions on their hands after taking care of this man. The other got some of the saliva in his eye. Perhaps they will be able to say something about the rigors of the Pasteur treatment. They have kept at their work and been very cheerful. I cannot see any change in their dispositions.

DR. FAXON: I want to say something about the treatment. Apparently the serum from the Pasteur branch in New York is as reliable as any that can be obtained. It was used in treating the house officers here. We got it from what seemed to be the best source. There were fourteen injections of two cubic centimeters each of the four per cent. suspension of prepared rabbit's cord. All the doses are the same, and supposed to be taken subcutaneously on successive days, and the instructions are to vary the site and not to put the inoculations too close together. One man got a slight malaise from the first injection. Aside from the fact that the injected areas became rather sore, rather itchy, and the lymph glands got enlarged and tender no ill effects were experienced. But the interesting thing to me is the fact that it really is a very simple thing and does not incapacitate the person taking it at all. No one should be deterred from taking the treatment. It does not amount to anything more than getting injections.

I looked up all the cases too. It is rather interesting to note that there were I think five of the eight cases where some record of the eye and pupils was kept. I think I am correct in saying that in all the cases dilatation of the pupils was noted. In the case we had the pupils were dilated and there was inequality.

According to the statement sent out with the rabies serum, apparently the time for immunity to develop is five weeks, including the two weeks' inoculation. Fifteen per cent. of people bitten by rabid animals will get the disease. A great point is made of cauterizing the wound with fuming nitric acid at once. The mortality is cut down to considerably less than one per cent. if immunizing treatment is started early and carried out properly.

UNITED STATES PUBLIC HEALTH SERVICE

CHRONOLOGICAL LIST OF CHANGES OF DUTIES AND STATIONS OF COMMISSIONED AND OTHER OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

FEBRUARY 1, 1928

Sanitary Engineer Leslie G. Frank. Directed to proceed from Montgomery, Ala., to Washington, D. C., and return, in connection with milk investigations. January 24, 1928.

Assistant Surgeon General Thomas Parran, Jr. Directed to proceed from Washington, D. C., to Hot Springs, Ark., and return, in connection with venereal disease control measures. January 25, 1928.

Surgeon W. A. Korn. Directed to assume charge of all Service activities at Port Angeles, Washington, effective February 15, in connection with quarantine and immigration at that port. January 26, 1928.

Associate Sanitary Engineer E. C. Sullivan. Directed to proceed from New York, N. Y., to Washington, D. C., and return, for the purpose of conferring with officials at the Bureau concerning the enforcement of the Interstate Quarantine Regulations and allied sanitary engineering matters. January 28, 1928.

Surgeon Joseph Goldberger. Directed to proceed from Washington, D. C., to Milledgeville, Ga., and return, in connection with nutrition studies. January 28, 1928.

Surgeon G. W. McCoy. Directed to proceed from Washington, D. C., to Baltimore, Md., and return, in connection with studies on scarlet fever and diphtheria. January 30, 1928.

BOARDS CONVENED

Board of medical officers convened to meet at U. S. Public Health Service Relief Station No. 339, Washington, D. C., at 2 p. m. February 6, 1928, to determine physical eligibility of officer of Coast Guard for promotion.

Detail for the Board:
Surgeon G. L. Collins,
Surgeon J. P. Leake.

APPOINTMENTS

Maurice A. Roe, appointed and commissioned in the grade of Assistant Surgeon effective date of oath.

H. S. CUMMING, *Surgeon General.*

The New England
Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the following-named committee:

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Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 126 Massachusetts Avenue.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The New England Journal of Medicine, 126 Massachusetts Avenue, Boston, Mass.

PROCRASTINATION IN DEALING WITH DIPHTHERIA

IN this number of the JOURNAL Lane and Forsbeck present a report of Diphtheria Deaths in Massachusetts.

Leading up to the record of deaths in this Commonwealth in 1926 the report of the diminishing incidence of diphtheria in the four year period preceding and including 1926 is encouraging but not wholly reassuring because this lowered morbidity rate is not altogether due to the employment of prophylactic measures since it is recorded in communities which have not used toxin-antitoxin as well as in those in which immunizing treatment has been more general.

In diphtheria variations in frequency and virulence have been recorded in some years. This is an experience common in dealing with other diseases.

Although public health authorities are agreed that in toxin-antitoxin there has been found a potent weapon in the contest against diphtheria other factors are of influence in a lowered morbidity and mortality rate.

Some writers believe that tuberculosis, for example, is less general than formerly because of more common immunity or resistance to the invasion of the bacillus. There may be seasons affecting the prevalence or virulence of the Klebs-Loeffler bacillus or there may be larger numbers of persons who through mild unrecognized infection have established immunity. Even if the human family is gradually breeding a race which will in time naturally antagonize diphtheria, it is certainly too early to be complacent. In all probability we are passing through a period in which the disease is less general and perhaps less virulent, but like smallpox may break out in malignant form if conditions favor, for like smallpox the disasters attending diphtheria may be comparable with the destructive force of a smoldering fire.

This report is especially instructive in its record of deaths and the relation of medical service to the victims.

It is astonishing that of 249 deaths, eight had no physician in attendance, and disappointing that there seems to be a disposition to delay the administration of antitoxin until a positive report is received and to give small doses.

Antitoxin is as much a specific in treating diphtheria as is quinine malaria and if physicians cannot use it intelligently there will come a time when public health authorities will see to it that the work of the attending physician is supervised. That means a feature of State Medicine which is one of the great clouds spreading its gloom over the practicing physician.

Here as in many fields of practice the safeguarding of the functions of the practitioner lies in his ability to use recognized therapeutic and prophylactic measures effectively.

This report should be read, read carefully and reread by every physician who holds himself ready to treat diphtheria.

GENERAL EDUCATION AND MEDICINE

THE proposition that higher average intelligence will lead to more general endorsement of scientific medicine seems to be logical. The fact that intellectual development may not always bring about the broadest wisdom is not a sound argument against the advantages of the best possible education of the masses even though the inability to apply correct reasoning to a grave problem is fairly common among those who have profited by the teaching methods recognized as adapted to promoting the development of the human mind by pedagogics.

As medicine is concerned in methods employed to promote the good of humanity, its exponents should and generally do feel a definite interest in our schools and often accept responsible positions on boards of education.

The conditions existing in the public schools of Boston as compared with other cities similar in size are encouraging as set forth by the Boston Chamber of Commerce in a study by Dr. Ayers, the noted statistician, who shows that those cities spending the most money for education have the best schools. Modern education covers the dissemination of knowledge with respect to health as well as mental development. Retention in school over the longest possible time means the moral and physical protection of the child, for if the child leaves school under sixteen he is more subject to the dangers and temptations of conditions found in the complex life of the city. Boston holds its children in school longer and in larger numbers than formerly and compares favorably with other cities. During the last ten years the attendance in Boston high schools has increased sixty per cent. and a similar increase is found in trade schools.

Statistics show that in Cleveland the attendance in high schools in 1925 was 13,144, in St Louis 11,305, in Baltimore 7,337, and in Boston 21,354. Although Philadelphia has a population twice as large as Boston the enrollment in her high schools was only one third greater.

An especial feature of interest in the quality of instructions in Boston Public Schools is found in the relative standing of graduates who apply for entrance to colleges as compared with those fitted by private preparatory schools. Both Harvard and Yale report that the intelligence tests show a higher percentage of graduates of the public schools although the cost of educating students in the preparatory is much in excess of that in the public schools.

Physicians and all others interested in better health and average intelligence of future citizens may use all reasonable effort to keep our public schools up to the highest possible degree of efficiency.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

OSGOOD, ROBERT B. A.B., M.D. Harvard 1899, F.A.C.S. Formerly Chief of Orthopaedic Service Massachusetts General Hospital; Chief of Orthopaedic Service Children's Hospital. John B. and Buckminster Brown Professor of Orthopaedic Surgery, Harvard Medical School; President New England Surgical Society; formerly President American Orthopaedic Association. Address: 372 Marlborough Street, Boston. Associated with him is

LUND, CHARLES C. M.D. Harvard 1920. Instructor in Surgery, Harvard Medical School; Assistant in Surgery, Boston City Hospital; Surgeon to Out-Patients, Collis P. Huntington Memorial Hospital; Visiting Surgeon, Long Island Hospital. Address: 527 Beacon Street, Boston. They write on "Fractures of the Odontoid Process". Page 61.

LANE, EDWARD A. A.B., C.P.H., M.D. Cornell 1916. District Health Officer Metropolitan District, Massachusetts Department of Public Health; Assistant in Public Health Administration, Harvard School of Public Health. Address: 546 State House, Boston. Associated with him is

FORSBECK, FILIP C. B.S., M.S., M.D. Rush 1925. Epidemiologist, Massachusetts Department of Public Health. Address: 546 State House, Boston. They write on "Diphtheria Deaths in Massachusetts, 1926". Page 73.

RHOADS, C. P. A.B., M.D. Harvard 1924. Surgical House Officer, Peter Bent Brigham Hospital; Instructor in Pathology, Harvard Medical School; Research Assistant in Pathology, Boston City Hospital; Trudeau Foundation Fellow. His subject is: "The Reticulo-Endothelial System—A General Review". Page 76. Address: Pathological Laboratory, Boston City Hospital.

DAVIDOFF, REUBEN B. B.S., M.D. Columbia University, 1922. Surgeon Out-Patient, Beth Israel Hospital; Assistant in Surgery, Boston City Hospital; Assistant in Surgery, Tufts Medical School. His subject is: "A New Traction Finger Splint". Page 79. Address: 483 Beacon Street, Boston.

FOSTER, GEORGE S. M.D. Tufts College Medical School 1906. Surgeon to the Lucy Hastings Hospital, Manchester, N. H. His subject is: "Uterine Malpositions". Page 81. Address: 967 Elm St., Manchester, N. H.

EMERSON, GEORGE S. M.D. Baltimore Medical College 1897. Member of the New Hampshire Medical Society. His subject is: "The Physician of the Future". Page 89. Address: Fitzwilliam, N. H.

DR. ELLIOTT C. CUTLER WILL ADDRESS THE STAFF MEETING OF THE MASSACHUSETTS GENERAL HOSPITAL

ON Thursday evening, March 8, Dr. Elliott C. Cutler will address the Staff Meeting of the Massachusetts General Hospital on "The Experimental Production of Abscess of the Lung."

His work may be expected to have a bearing on the important question of the origin of postoperative pulmonary complications in which he has long been interested clinically and experimentally. He is among those who have upheld their origin in the majority of cases by embolism from the field of operation, while others have maintained that they arise chiefly by the aspiration of infected material.

Dr. Cutler is a graduate of the Harvard Medical School, served as House Officer at the Peter

Bent Brigham Hospital and as Resident Surgeon at the Massachusetts General Hospital. He is now Professor of Surgery in Western Reserve University School of Medicine and Chief Surgeon, Lakeside Hospital, Cleveland, Ohio.

The Massachusetts Medical Society

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Why Do An Episiotomy?

There are two main reasons for doing an episiotomy, the first, to avoid extensive irregular tears of the perineum; and the second, to overcome the resistance of a rigid perineum, thereby favoring normal instead of forceps delivery in many instances. One of the most distressing sequelae of labor is a tear of the perineum through the sphincter ani and anterior rectal wall. An episiotomy performed at the proper time will prevent this laceration in almost every instance. Again, in irregular tears not involving the sphincter, the repair, because of ragged edges, is never as satisfactory as the repair of a straight incision.

Two types of episiotomies are in use, first the median, which is also referred to as perineotomy, and second the lateral. The advocates of the lateral method object to the median on the grounds that if the incision is extended by the advancing head, it may go through the sphincter ani. This, however, is not a sound reason as this accident may be avoided by operatively extending the incision in such a way that it encircles the anus on one side, thus saving the sphincter. As a general principle, it is probably better to employ a lateral incision when considerable room is required and a median when the opposite obtains. The lateral episiotomy is best done on the side the occiput points, in other words, a right episiotomy in a right position and a left episiotomy in a left position. Very rarely is it necessary to make an incision on the two sides. Incisions of the perineum are generally performed on primiparae, although they are sometimes necessary in multiparae. A multipara who has had an episiotomy with her first labor comes to a second delivery with her external genitals resembling those of a primipara and therefore it may be expedient to again incise the perineum at this delivery. The same applies to a multipara who has had an extensive repair of laceration of the perineum with a previous labor.

EPISIOTOMY VS. DILATATION OF THE PERINEUM

Those who favor manual dilatation of the perineum and vagina before delivery state that this procedure obviates the performance of perineal incisions. This method of dilatation has recently been advocated under the name of "ironing the perineum." While this procedure will overcome a resistant perineum, it not infrequently results in the separation of the levator ani muscles under the intact mucous membrane and skin. As a result of this a rectocele may soon appear. This condition practically never occurs after well sutured perineal incisions.

TECHNIQUE OF REPAIR

The upper angle of the wound should be exposed. This is readily accomplished by the use of a self retaining perineal retractor, the Gelpi and Bland models being excellent instruments for this purpose. The vaginal mucosa and fascia are sutured with interrupted sutures of chromic catgut. The levator ani muscles, covered by their fascia, are approximated with like sutures. The superficial tissues are closed with fine chromic catgut. The skin edges are united by a subcuticular suture of fine catgut. Some operators prefer the use of silkworm gut sutures in the external perineum. Since the sphincter and rectum are not involved in the wound it usually heals cleanly. Clean healing is more difficult to secure when repairing a tear involving the sphincter ani and bowel. Under normal conditions the incision is generally completely healed by the time the patient is allowed out of bed, so that her lying-in period is not prolonged because of this operative procedure.

Questions of a similar nature to the above will be discussed in the JOURNAL each week. They may be addressed to the Clerk of the Committee, in care of the JOURNAL and will be answered by members of the Committee of the Section of Obstetrics and Gynecology.

BOSTON MEDICAL LIBRARY NOTES ON LITERATURE AND RARE BOOKS

THAT it is not necessary to abandon practice and seclude oneself in a laboratory in order to satisfy the desire to make some contribution to the science or the art of medicine any more than it is necessary to immure oneself within the four walls of a monastery or nunnery in order to serve one's Maker, is well seen if one follows the clinical investigations of Dr. Joseph Capps of Chicago, who has been studying the distribution and character of pain brought out by irritation with a blunt instrument in various localities within the pleural, perintoneal, or pericardial cavities. These studies were, of course, made upon human subjects when they were alive and not anaesthetized, except for a local anaesthesia to the skin. He shows very clearly that the somatic and parietal pleura are supplied from two different sets of nerves and that when the portion innervated by the intercostal branches is irritated by a blunt probe, passed through a

canula into the pleural cavity, the skin supplied by that intercostal branch is the seat of pain but when that portion supplied by the phrenic nerve is similarly irritated pain is referred to the top of the shoulder and not at all to the skin on the chest.

In the case of the peritoneum it was more difficult to get the intestines out of the way so that the same method of investigation could be carried out, but a method was found after introducing a gas into the peritoneal cavity on which the intestines were floated up together with assistance from the fluoroscope by which it was possible to obtain results of the same general character. And so in the pericardium it was possible to demonstrate the peripheral reference of pain, just as in the pleura, when the region touched was at the reflexion of the pericardium and pleura over to the dome of the diaphragm where the nerve supply was phrenic and the reference of pain was accordingly again to the shoulder. These observations, important in themselves, open up the possibilities of carrying on still further with studies of this sort, thus materially contributing to diagnostic skill and an evaluation of symptoms now little understood.

A Philadelphia surgeon, Dr. Carnett,* has been stressing the importance of the intercostal reference of pain to the abdomen when the lesions were really in the course of these nerves, the lower five or six of which furnish the skin of the abdomen with sensory fibres. He feels he is able by abdominal palpation directed to the deeper structures of the abdomen to discriminate between pain of intraperitoneal origin and that of intercostal origin. At the Massachusetts General Hospital similar investigations are being carried out with a view to determining the exact location of pain derived from oesophageal, duodenal, and upper intestinal lesions as indicated by its reference to localities remote from the seat of these lesions.

The literature on this subject will be exhibited in Holmes Hall at the Boston Medical Library during the week of March 5th.

The Library has been the recipient of a gift of very great interest and value, a first edition of Galvani's work on animal Electricity published in 1792. This may also be seen at this time.

The work is entitled DeViribus Electricitatis in Motu Musculari, and was published in Modena only six years before the author's death. Luigi (Aloisio) Galvania was born in Bologna, September 9, 1737, and died in the city of his birth, December 4, 1798. He was Docent and then Professor of Medicine at Bologna and also held a Chair in Anatomy. It was while studying muscles that he observed that muscle preparations from frogs' legs when hung on copper hooks coming in contact with an iron balustrade contractions were developed in these muscles. It was this observation that revealed to physicists the unthought of powers of electricity and to physiologists the equally undreamed of electric manifestations in living tissue. Even before this time 1791, Galvani had been experimenting with living tissues as affected by electrical discharges from Leyden jars. Volta took exception to the interpretation placed by Galvani upon his investigations and the discussion provoked a heated argument between those who thought it proved the existence of animal electricity (Galvani) and those who regarded it as proof that electricity was generated by the contact of dissimilar metals (Volta). This work is in Latin and is bound up with dissertations on the same subject by Aldine and Carminati, in Italian. The printing and paper are excellent and in perfect preservation. The illustrations in the back of the volume are very instructive as showing how experimental work was conducted at that time.

Walsh had observed animal electricity in the Torpedo (1773) and John Hunter had noticed the same thing in other electric fishes. Galvani's work however on the electric properties of excised animal tissues really started the modern work on this subject. At this time all nerves in the body were supposed to originate in the brain and this discovery of Galvani's did not influence physiological research very much at that time. In the meantime, however, men were employing electricity in the treatment of disease and static machines were installed in St. Thomas' Hospital (1799), St. Bartholomew's 1777, and Middlesex Hospital in 1767. There is an old print of the date of 1799 hanging on the wall of St. Bartholomew's, in which a patient is figured being treated by static electricity.

*Surg., Gynaecol. and Obstet., May, 1926; 625-632.

MISCELLANY

SMOKE ABATEMENT RECOMMENDATIONS OF THE DEPARTMENT OF PUBLIC UTILITIES, SUBMITTED TO THE 1928 SESSION OF THE GENERAL COURT

In compliance with Chapter 45 of the Resolves of 1927, the Department of Public Utilities of the Commonwealth has submitted a report on smoke abatement, which will be considered in the 1928 session of the General Court.

At present there is a smoke abatement law (Chapter 651, Acts 1910) which governs Boston, Brookline, Cambridge, Chelsea, Somerville and Everett. It is enforced by the Smoke Abatement Division of the Department of Public Utilities.

The changes proposed in this law are as follows:

1. *A uniform standard of emission.* For all stationary and marine stacks, smoke of a density equal to or greater than No. 2 of the Ringelman Chart (40% black) would not be permitted for more than 6 minutes in one hour except that during the 6 minutes, a density equal to No. 3 (60% black) or greater, might be discharged for two minutes.

Note: The present grading of stacks according to size and special standards for each grade would be eliminated by this proposal, with the exception of provisions relating to locomotives which are left unchanged.

The proposed standard is slightly more lenient than those in the present law for stationary stacks up to 5 feet in diameter, and is stricter for stationary stacks of larger diameters and for marine stacks. (See attached table.)

2. *An enlargement of the smoke abatement area governed by the 1910 act, to include Metropolitan Boston.*

   Note: The cities and towns which would be added are: Arlington, Belmont, Braintree, Canton, Dedham, Lynn, Malden, Medford, Melrose, Milton, Needham, Newton, Quincy, Revere, Saugus, Stoneham, Wakefield, Waltham, Watertown, Winchester, Winthrop, Woburn and Weymouth.

3. *Increase in penalties for violations to a maximum fine of $500 or imprisonment for not more than 3 months, or both.*

   Note: The penalty under the present law is $10 to $50 for the first offence and $20 to $100 for every succeeding offence.

4. *A new provision that individuals owning property located within one-half mile of the source of smoke may bring proceedings in court, on their own initiative, to have the violation of law restrained, upon showing that they suffer personal or property damages thereby.*

There is also a general law on smoke abatement (Sections 132 to 136 inclusive of Chapter 140) which applies to other cities and towns of the Commonwealth provided that they accept its provisions. The Department also recommends three changes in this general law which are as follows:

1. *The same standard of emission as is recommended for the Boston law.*

   Note: Under the present General Law, the emission of dark or dense gray smoke within a quarter mile of a dwelling for more than 5 continuous minutes or during 90 minutes of any continuous period of 12 hours, is declared a nuisance, unless authorized by annual permits issued by the city or town government.

2. *The same penalties as are recommended for the Boston law.*

   Note: The present penalty is a fine of not more than $100 for each week during any part of which the nuisance exists.

3. *The same new provision permitting court action by individual property owners as is recommended for the Boston law.*

THE PRESENT STANDARDS

Classification of Stacks and Maximum Permissible Densities and Duration of Emissions for Each Classification, according to the Smoke Abatement Law for the City of Boston and Vicinity (Chapter 651, Acts 1910)

Classification of Stacks	Maximum Permissible Density of Smoke (2)	Permissible Duration in Any One Hour (3)
Stationary Stacks		
Class I. Up to 5 feet inside diameter (4)	40% black	6 minutes
Class II. Between 5 and 10 feet inside diameter	60% "	3 "
Class III. Over 10 feet inside diameter	40% "	25 " (5)
Stacks of Vessels		
Class IV. Up to 4 feet inside diameter	60% "	3 minutes
Class V. Over 4 feet inside diameter	60% "	5 "
Locomotive Stacks		
Class VI.	60% "	20 seconds in any one period of 5 minutes (6)

(1) Temporary permits for emission of smoke in excess of the requirements of the law may be granted by the Department of Public Utilities for periods not exceeding six months if public convenience requires it.
(2) *The emission of densities equal to or greater than those prescribed, for periods longer than specified, is prohibited.*
(3) The number of minutes in any one hour need not be consecutive.
(4) The wording of the act is "having an inside area at the top not exceeding the area of a circle 5 feet in diameter."
(5) During this time of 25 minutes, smoke of 60% density may be emitted for 5 minutes.
(6) Locomotives moving trains of 6 or more cars may emit smoke for 30 seconds. Locomotives in and around roundhouses may emit smoke for 15 minutes when fires are being built.

—Civic Bureau, Boston Chamber of Commerce.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1927 AND SEVEN-YEAR AVERAGE

WEEK ENDING FEBRUARY 4

	1928					1927			
	Wk. ending Jan.14	Wk. ending Jan.21	Wk. ending Jan.28	Wk. ending Feb.4	Average cases reported for week corresponding to Feb.4 for past seven year	Wk. ending Jan.15	Wk. ending Jan.22	Wk. ending Jan.29	Wk. ending Feb.5
Actinomycosis	-	-	-	-	-	-	-	-	-
Anthrax	-	-	-	-	-	-	-	-	-
Botulism	-	-	-	-	-	-	-	-	-
Cerebrospinal Men	-	1	-	1	1	2	1	-	1
Chickenpox	152	97	105	136	97	136	122	113	139
Conjunctivitis Inf.	-	-	-	-	3	-	2	-	-
Diphtheria	44	27	46	42	63	31	38	29	35
Dysentery, Amoebic	-	-	-	-	-	-	-	-	-
Dysentery, Bacillary	-	-	-	-	-	-	-	-	-
Encephalitis, Epid.	-	1	1	2	1	-	-	1	-
Favus	-	1	-	-	-	-	-	-	-
German Measles	5	2	6	3	7	5	4	4	3
Hookworm Infection	-	-	-	-	-	-	-	-	-
Influenza	3	2	7	11	45	24	28	31	11
Leprosy	-	-	-	-	-	-	-	-	-
Malaria	-	-	1	-	-	-	-	-	-
Measles	142	139	164	265	248	17	49	48	60
Mumps	88	140	95	78	49	49	28	32	23
Paratyphoid Fever	1	1	-	1	-	-	-	1	1
Pneumonia (Broncho)	35	27	27	33	46*	34	52	26	38
Pneumonia (Lobar)	66	57	58	37	45	32	57	52	48
Poliomyelitis	-	1	1	2	-	-	-	1	1
Scarlet Fever	112	149	124	85	143	101	111	104	116
Septic Sore Throat	3	-	4	1	2	4	2	3	2
Smallpox	53	21	15	6	2	-	-	-	-
Tetanus	1	-	1	-	-	-	-	-	-
Trachoma	-	-	-	-	-	1	-	-	-
Trichinosis	-	-	-	-	-	-	-	-	-
Tuberculosis (Pul.)	20	21	63	22	34	31	25	30	30
Tuberculosis (o.f.)	1	2	7	6	2	2	4	6	3
Typhoid Fever	3	2	1	-	5	1	2	6	1
Typhus Fever	-	-	-	-	-	-	-	-	-
Whooping Cough	120	130	125	155	69	47	58	61	40
Gonorrhoea	93	20	37	38	18	63	11	21	12
Syphilis	59	18	75	42	27	27	21	30	10

*Average for three years. Made reportable January 1, 1925. Remarks: No cases of cholera, Asiatic, glanders, plague, rabies in humans and yellow fever during the past seven years.

LEGISLATIVE NOTES

All the bills dealing with vaccination introduced into the Legislature this year have been withdrawn. No hearings were held and no new action is to be expected during this session.

HOUSE BILL 748

The Joint Judiciary Committee conducted a hearing on this bill Tuesday, February 21.

This bill would, if enacted, practically destroy the provision in the present law which obliges plaintiffs to file action for malpractice suits within two years.

The text is as follows:

An Act relative to the Limitation of Actions against Physicians and Others for Malpractice, Error or Mistake.

Section 1. Section four of chapter two hundred and sixty of the General Laws, as amended by section one of chapter three hundred and nineteen of the acts of nineteen hundred and twenty-one, is hereby further amended by inserting after the word "accrues" in the ninth line, the words:—or becomes known—so as to read as follows:—Section 4. Actions for assault and battery, false imprisonment, slander, actions against sheriffs, deputy sheriffs, constables or assignees in insolvency, for the taking or conversion of personal property, actions of tort for injuries to the person against counties, cities and towns and actions of contract or tort for malpractice, error or mistake against physicians, surgeons, dentists, hospitals and sanitaria, shall be commenced only within two years next after the cause of action accrues or becomes known; and actions for libel shall be commenced only within one year next after the cause of action accrues.

Section 2. This act shall take effect upon its passage.

The bill was opposed by Dr. J. S. Stone, representing the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, Representative Hale of Springfield, the officers of the State Dental Association, the optometrists, and Mr. Homans, an attorney who has been counsel for defendants in some cases. Miss Johnson of the State Nurses' Association, and several physicians, recorded oppositions.

HOUSE 707

The adverse report of the Committee on State Administration upon this bill to establish a Board of Registration of Osteopathy has been accepted by both House and Senate.

RECENT DEATHS

FOSTER—Dr. Horace Kendall Foster, for a long time a prominent physician of Peabody, died at his home in that city, February 20, 1928, aged 73. He was born in North Andover, Dec. 5, 1854, a graduate of Dartmouth College in the class of 1879 and of Dartmouth Medical School, three years later. Settling in Peabody, he joined the State Medical Society and served it as Councilor for a long series of years. Dr. Foster was medical examiner of the 8th Essex District and for 20 years president of the J. B. Thomas Hospital in Peabody, also vice-president of the Warren Five Cents Savings Bank. He is survived by two sons and a daughter.

JOURNEAY—Dr. Warren William Journeay, of Boston, a graduate of Tufts College Medical School in 1900, died suddenly while playing a game of billiards, February 20, 1928, from heart disease, at the age of 62.

SAYLES—Dr. Joseph Borland Sayles, a Fellow of the Massachusetts Medical Society since the date of his graduation in medicine, died suddenly from heart disease at Taunton, February 21, 1928, at the age of 62.

Dr. Sayles was born in Somerset, Mass., February 28, 1865, took an M. D. from Bellevue Hospital Medical College, New York, in 1888, and another from Dartmouth Medical School in the same year. He settled in practice in New Haven, Conn., moved to West Newton, Mass., in 1895, to Dighton the following year and to Taunton in 1911. There he had practiced since, devoting his attention largely to dermatology. He was a member of the New England Dermatological Society and a Fellow of the American Medical Association.

EDSON—Dr. Ptolemy O'Meara Edson, a retired Fellow of the Massachusetts Medical Society, died at his home in Roxbury after a short illness with pneumonia, February 13, 1928, at the great age of 94.

He was born in Chester, Vt., on December 27, 1833, was the son of Ptolemy and Susan (Pratt) Edson, was prepared for college at Appleton Academy in New Ipswich, N. H., and was graduated from the University of Vermont in 1857, and then attended the medical department of the university taking his M.D. in 1860. After his graduation he assisted his father in practice in and around Chester.

In Civil War days, Dr. Edson served as assistant surgeon in the First Vermont Cavalry, from November, 1861, until March, 1864, and in the latter year he became surgeon with the rank of major of the Seventeenth Vermont Infantry, serving as such until February, 1865. Upon returning home from the war he resumed practice in his native place, Chester, but in 1866 moved to Roxbury, where he since had made his home and continued his profession. He joined the State Medical Society in 1867 and was retired in 1904. He was a member of the Loyal Legion and had belonged to the G. A. R. and the Roxbury Society for Medical Improvement, the Norfolk District Medical Society, Boston Obstetrical Society and the Boston Medical Library. He served many years on the Boston school committee. In his religious interests he was affiliated with the old First Unitarian Parish. For many years Dr. Edson resided on Warren Street in Roxbury, before removing to Elm Hill Avenue.

On October 30, 1865, Dr. Edson married Mary Augusta Young, in Bangor, Me. Mrs. Edson died in 1922. Surviving Dr. Edson are two sons and two daughters. The sons are Dr. Carroll Everett Edson, residing in Denver, Col., and John Wells Edson, a resident of Dedham.

WOODCOCK — Dr. Galen Murray Woodcock, of Bangor, Maine, died in that city February 17, 1928, aged 75. He was a native of New York and was graduated at the New York University Medical College in 1873, at the age of 21. After practicing in New York and in South Brewer, Maine, he settled in Bangor in 1882. He was a Fellow of the American Medical Association and a member of the Maine Medical Association.

THE DEATH OF DR. JOHANNES FEBIGER

Dr. Johannes Febiger has recently died. He was an able pathologist and had devoted much time to research work in cancer, having been the first to produce cancer experimentally with a definite agent according to the opinion of some writers.

He was Professor of Pathological Anatomy in the University of Copenhagen. He was awarded the Nobel Prize in October, 1927.

OBITUARY

JOHN COLLINS WARREN*

1842-1927

Born of a family whose name for more than a century has implied not only eminence in the medical profession, but also the highest ideals of service to the community; carrying on this trust successfully with its manifold duties and its obligations; and laying down the burden only after having seen the accomplishment of his most cherished ambitions; such is an epitome of the life of Dr. John Collins Warren.

Great grandson of Dr. John Warren, one of the founders of the Harvard Medical School, whose brother, Dr. Joseph Warren, fell at the Battle of Bunker Hill; grandson of Dr. John C. Warren, one of the founders of the Massachusetts General Hospital; son of Dr. J. Mason Warren, again a surgeon at the Massachusetts General Hospital of notable accomplishments; Dr. John Collins Warren in his sixty-one years of professional life sought and found opportunity to maintain the traditions of his illustrious forbears, and to add materially to their brilliant record.

The two discoveries which have had the most profound influence upon medical science, anaesthesia and antisepsis, came within his lifetime. The discovery of ether anaesthesia was made when he was but a child, but the controversies which followed it extended into the period of his early medical career, and he remained to the last a supporter of the claims of Dr. W. T. G. Morton as the real discoverer of the use of ether as an anaesthetic. In 1869 Dr. Warren visited Lister in Glasgow, and made a study of his methods of employing antiseptics in surgical operations. On his return to Boston he assumed an active part in the introduction of these methods at the Massachusetts General Hospital.

The microscopic study of pathological material derived from operations was at this time in its infancy, and Dr. Warren was one of the first to develop in this country the practical application of these methods, not only for the benefit of the individual patient, but also for the investigation of surgical disease. During the Civil War, while still a student, he served as a medical cadet in the Union forces, and there obtained an interest in and a knowledge of surgical infections which years later led to his book on Surgical Pathology and Therapeutics, his most notable literary accomplishment.

Loyalty and devotion to the Massachusetts General Hospital, and to its traditions were bred in the very fibre of Dr. Warren's being. Through all the stages of promotion from house-pupil to senior surgeon he gave to the hospital the best he had. As a surgeon he was courageous, resourceful and thorough, and he was admired and loved alike by his patients and his assistants. His Sunday ward visit when he was a senior-surgeon was never to be forgotten. Each case on the wards was reviewed and discussed, and all with a nice formality and kindly courtesy that was an inspiration to the group of assistants and younger colleagues who made a point of attendance on these occasions. His deepest interest was in the surgery of tumors and it was in this subject that he made his greatest contributions to the advance of surgical knowledge and practice, notably in the surgery of cancer of the breast.

*Prepared for the Faculty of the Medical School of Harvard University and read at their meeting February 3, 1928.

A clear systematic thinker widely read in surgical literature, and endowed with a happy faculty of apt illustration of the point he wished to emphasize, by anecdote or example, he made an admirable teacher of Surgery whose influence was felt by many generations of students in the Medical School and in the Hospital. The time and attention he gave to the preparation of his lectures and clinics was an example to his younger assistants, and the readiness with which he sacrificed his personal comfort or pleasure to this purpose was an inspiration to them, and a fair indication of the great respect in which he held his duties and his privileges as an instructor of medical students. He held the post of Moseley Professor of Surgery in the Harvard Medical School from 1899 to 1907 when he became *emeritus*.

On his retirement from active hospital service in 1905, he gave up his private practice and devoted himself unremittingly to the promotion of the many causes in which his varied life had led him to take the deepest interest. Chief among these interests was the Harvard Medical School, and when it became necessary to move the School from the then inadequate buildings on Boylston Street, it was to him and to Dr. Henry P. Bowditch that was vouchsafed the vision, the faith, and the ability to conceive the magnificent project for the present buildings on Longwood Avenue, and to secure the great fund needed for their construction and endowment. We may rejoice that Dr. Warren at least lived to see this vision materialize, as one after another of the hospitals and laboratories necessary to the completion of this great medical centre came to occupy their place in accordance with the original plan. Even the dormitory for medical students, which Dr. Warren was the first to advocate, but which at that time seemed so remote as to be beyond all expectation, came into being and was actually opened for occupation before his death.

In 1899 a sum of money was left by the will of Caroline Brewer Croft, for the investigation of the cure of cancer, and Dr. Warren was named a Trustee of this fund. This bequest led to the organization of the Cancer Commission of Harvard University, of which Dr. Warren for many years was Chairman. Under his guidance, and chiefly due to his own interest in this subject and to a happy faculty of securing and sustaining the interest of others, the Cancer Commission added to its resources and extended its activities. The funds for the construction of the Collis P. Huntington Memorial Hospital for Cancer Research were obtained almost entirely by his efforts, and the dedication in 1922 by the President and Fellows of Harvard College, of the adjoining laboratory building, as the "J. Collins Warren Laboratory" was held by him to be the supreme honor of the many accorded him in his professional career.

Dr. Warren had an almost boyish simplicity and directness of character, and a sense of humor which contributed in no small degree to the facility with which he established himself in the hearts of those about him. It was not his honors and accomplishments so much as his character and personality which left an indelible impression. His sincerity, his unfailing courtesy, reminiscent of a generation earlier than his own, his indefatigable industry and his loyalty were the striking qualities which so endeared him to his patients, his students and his colleagues. There can be few finer examples in medical history of a family tradition of service extending over five generations and productive of so much benefit to the community and to the medical profession. The continuity of this tradition is for the Harvard Medical School, no less than for the Medical Profession of Boston, a most enviable heritage.

HARVEY CUSHING,
CHARLES ALLEN PORTER,
February 3, 1928. ROBERT B. GREENOUGH.

CORRESPONDENCE

THOUGHTS INSPIRED BY READING THE PAPER OF DR. REGINALD FITZ

Worcester, Mass.,
February 5, 1928.

To the Editor of the Boston Medical and Surgical Journal:

One of the chief pleasures in reading Dr. Reginald Fitz's article "Clinical Observations on 'Well' Patients," in your issue of Feb. 2, 1928, is in the reminder that the art of medicine is still as important as the science of medicine.

Persons in health pursue their daily activities. Those seeking the consulting room do so because of disease. The full significance of this is not always appreciated.

In recent years emphasis, perhaps undue emphasis, has been placed upon the scientific phases of medical practice. Furthermore the student and young practitioner naturally and with commendable zeal, are more interested in the mechanics than in the philosophy of their profession. Hence the growth of specialization. Possibly also this phenomenon may in some measure reflect the materialistic, the mechanistic concepts of the period.

As experience widens and judgment matures it is realized that in general practice a large and increasing proportion of those seeking aid are much more in need of our art than of our science. The usefulness, the frequent surprising results, the success, of the heroic army of country practitioners far removed from the expert assistance of the specialist, abundantly demonstrates this thesis.

Earlier, art bordering on the necromancy was the best that the profession had to offer. Later the microscope, test-tube and the like offered little to the average sufferer save the sterile formulae of science. Today it is possible to quicken our good offices by that sympathetic insight and sound counsel which not only promote restoration to health but frequently differentiate the "physician" from the "doctor." Let it not be said

> "Myself when young did eagerly frequent
> Doctor and saint and heard great argument
> About it and about, yet evermore
> Came out by the same door wherein I went."

With Mackenzie we believe a careful study of the history and the environmental factors which concern the individual are of the essence of success. After all, probably, the most important thing in medicine is a knowledge of what *not* to do.

A. E. P. Rockwell.

TETANUS! SEVERE CASE WITH RECOVERY!

Dear Editor:

This case seems of sufficient interest to report.

John O——, aged 49, called me at 2 a. m., Sunday, November 27, 1927, having been sent to the Lowell General Hospital, in a state of tonic convulsion which began at midnight. He was injured two weeks before this, having his left hand drawn into a wool-scouring machine, causing a lacerated, crushing wound of the ring and little fingers.

His physician picked out particles of wood and grease, and dressed the hand daily in antiseptic soaks. The day before admission to the hospital he was taken with very severe abdominal pain, for which he received a sedative. Serum was not given.

His condition on admission was one of tense rigidity of spine, with opisthotonos, abdominal muscles board-like, jaws tightly set, short, jerky respirations, livid face and bathed in a profuse, exhausting sweat.

He was given 4500 units anti-tetanic serum, by spine, and the same intravenously. He was somewhat improved by this, but complete relaxation was not obtained for 48 hours. Later in the day 20,000 units were given by vein, and this amount was given daily for four days, divided between veins and spine.

The patient continued having spasms three to six times in 24 hours, for a number of days, and they were very exhausting.

He was kept alive by rectal enemata for a week, being unable to swallow food. These enemata were supplemented by water both rectally and by hypodermoclysis, and Chloretone was given in 5 to 15 grain doses. Morphine was avoided because of the fear of respiratory paralysis.

He gradually improved, but each time the serum was reduced, the spasms recurred. The little finger healed slowly, and finally, on December 17, I removed it under Novocaine anaesthesia. The X-rays showed bone involvement of two phalanges, and I felt that the spores were probably lingering there and feeding the toxins to the system.

He improved much faster after this, and received his last large dose, 5000 units of serum, December 22.

The following day 1500 units were injected near the wound. He was discharged to his home, practically well but weak, January 1.

He received in all 187,000 units of anti-tetanic serum, with no untoward results. There was never high fever, kidneys showed no special change except excessive amounts of triple-phosphates in the urine.

Very truly yours,

G. Forrest Martin, M.D., F.A.C.S.

SIR FRANCIS DRAKE AND THE AUTOPSY IN THE WILDS NEAR THE GULF OF DARIEN

Mr. Editor:

The recent interesting meeting on various aspects of pathology, held at the Boston Medical Library, in which the speakers stressed the value of autopsies so strongly, may perhaps add point and interest to this letter.

It is shown that the great explorer, implacable foe of Castilian supremacy on the seas, was also alive to the value of autopsies, and that "Drake's drum" beat for medical science as well as to arms, for repeated singeings of the Castilian monarch's beard.

The quotation is from "Sir Francis Drake" by E. F. Benson, Harper Brothers, 1927. Every doctor should *make* time to read this book.

Drake had been engaged in making raids seawards from his camp in the wilderness, with his 70 odd Devon boys, to mask his intention of land attack on the mule trains, laden with gold and silver; he intended to intercept this rich prize as the pack trains neared Nombre de Dios, on the journey from Peru. He had been on a raid with two of his pinnaces, and on his return in the first week of January 1573, "Came as yet heavier trouble."

"A deadly sickness broke out in the camp: within two or three days of its appearance six men died of it, and soon thirty, or nearly half the entire company were stricken.

Probably it was yellow fever, for malaria could not have claimed its victims so speedily."

"The skill of the ship doctor was of no avail, but it was possible, thought Drake, that a post mortem might show what organs were affected, and so point to a remedy. But none must be able to say that he spared himself, and when, one night, his young brother Joseph died in his arms, he ordered the doctor to take him as the subject for dissection. But nothing was found that could suggest a cure, and then in turn the doctor who had already suffered and recovered from the disease, made his own sacrifice for the sake of the rest."

"He concocted a dose of dangerous potency which

he thought might prove efficacious, but he tried it first, not on any of his patients, but on himself, and died of it. The two incidents make us realize what sort of spirit animated the leaders of the fever stricken camp."

"These were calamities which might well have snapped even a finely tempered courage: twenty-eight of the crew had now perished of the plague, there had been four casualties otherwise, and both Drake's brothers were dead. But his flame never flickered for a moment, nor did the idea of giving up the quest so much as enter his head."

This unknown doctor of Drake's company surely deserves a place in history, a pioneer before the great Lazear.

Very truly yours,

WILLIAM PEARCE COUES.

January 26th, 1928.

CLINICAL LABORATORY SERVICE

Dear Editor:

I am enclosing herewith an article bearing on clinical laboratory service in the United States.

This is sent to you for your information. You are at liberty, also, to publish it in whole or in part if you so desire. This report represents one of the very important pieces of work recently put into effect. Its tendency is to prevent lay technicians, promoters or others from presuming to dictate to or to advise physicians regarding matters which properly belong to graduates of medical schools.

Very truly yours,

N. P. COLWELL, *Secretary,*
Council on Medical Education and Hospitals.

CLINICAL LABORATORY SERVICE IN THE UNITED STATES

Statement by the Council on Medical Education and Hospitals

During the last decade there been much discussion in medical and laboratory journals, and particularly on the platform of medical and laboratory conventions, regarding the status of the clinical laboratories of the country. Especially it was regretted that the practice of clinical pathology, regarded as one of the medical specialties, had fallen into disrepute. The fact was lamented that the laboratory work had fallen into the hands of lay technicians and become the toy of persons who had a purely commercial point of view and very little training for the work. Much disgust and quite a strong note of despair was sounded by those few members of the medical profession who had championed the cause of clinical pathology and had adopted that specialty as a life work.

Many letters were received at the office of the American Medical Association from practitioners of pathology and leaders in medicine, regretting the drift toward lay commercialism, and urging that something be done to counteract it. What to do about it was a question. Organizations of chemists were interested, because some of their members ran laboratories. Likewise organizations of clinical pathologists, bacteriologists and of the medical profession were equally interested. Some of these organizations working alone undertook to investigate and to standardize the practice of clinical pathology, hoping to check the drift of that practice into the hands of technicians and restore it to its rightful place as a medical specialty.

The efforts of those organizations working single handed were of little or no avail except to emphasize the enormity of the task and the necessity for coöperation.

COÖPERATION EFFECTED IN 1923

The necessary coöperation of the laboratory and medical organizations was brought about in 1923, at the annual meeting of the American Medical Association in San Francisco. At that time, delegates sent by the American Chemical Society and the American Association of Pathologists and Bacteriologists separately petitioned the American Medical Association to establish some supervision over clinical laboratories. This led to the appointment of three committees representing the American Chemical Society, the American Association of Pathologists and Bacteriologists, and the Council on Medical Education and Hospitals. At a joint meeting of these committees in Chicago early in 1924, after much deliberation, certain basic principles underlying sound laboratory service was agreed upon, and emphasized, especially the necessity of a qualified bona fide director as the prime essential. The joint committee agreed that the work could best be conducted by the Council on Medical Education and Hospitals.

The first steps were: (a) to secure a complete list of laboratories in the country; (b) the preparation of a schedule of essentials in an approved clinical laboratory, and (c) the preparation of a questionnaire by which the essential facts regarding each laboratory could be obtained. Each of these measures was carried out with the advice and coöperation of fifty or more clinicians and others expert in laboratory work, including the committeemen of the above-named organizations, and by the officers of the American Society of Clinical Pathologists, which society very early showed an interest, and from which the Council has received a hearty coöperation.

After being revised and adopted by all parties interested, the questionnaire was mailed to all the laboratories of the country and a most hearty response was received. A complete report of the survey, "Essentials of an approved Clinical Laboratory," and a preliminary list of laboratories which appeared to be fully complying with those "Essentials," were published in the Hospital number of the Journal for April 3, 1926. The facts as published were submitted to the House of Delegates of the American Medical Association at the Dallas session in 1926 and approved by that body.

To assist in giving as fair consideration as possible to each application for approval, a strong committee of laboratory experts was formed in every state or section of the country. Those committees aggregate one hundred and twenty individuals representing, as equally as possible, the coöperating organizations, and hence the interests of the laboratory profession. Under the direction of the Council, each committeeman makes his investigation and renders his report or advice independently of other committeemen in the same district.

At the present time, of the three hundred and fourteen laboratories that have reported, one hundred and fifty-one, after careful investigation, have been placed on the approved list and other applications for approval are constantly being received.

The Council lends all possible assistance to laboratories whereby they may become eligible for admission to the accepted list. Every laboratory that makes a report and signifies a desire to conform to the requirements, is informed in regard to any deficiencies. The spirit of this movement all the way through is constructive. Anyone who knows the condition of the laboratory field at the time this survey was begun, would not expect very telling or spectacular results to be shown by this time; nevertheless, there are ample reasons for believing that actual improvements are being made: (1) A number of laboratories formerly run by technicians and only nominally under "medical" directors, have come under the ownership and actual control of clinical pathologists of high professional standing and ripe experience; (2) a number of laboratories under the control of technicians have gone out of business; (3) the "Essentials" have been published repeatedly

and thus brought to the attention of all persons working in the field of clinical pathology; (4) there is an increased demand for pathologists to man the clinical laboratories of the country; (5) the director of the Mayo Foundation says that the salaries offered the pathological graduates of the Foundation are double those offered to other graduates of the Foundation; (6) the feeling of unsteadiness indicated in the discussions of a few years ago has subsided to a considerable degree, and there is a more hopeful attitude on the part of clinical pathologists themselves.

FUTURE OUTLOOK

The movement is still in its beginning, but a good start has been made. To what extent doctors have actually discontinued sending specimens to unapproved laboratories, and are sending them to approved laboratories, is not known. The educational results, however, are becoming increasingly evident. In order to secure the best analyses for the benefit of their patients as well as to best conserve the interests of the medical profession, physicians should refuse to have their work done at laboratories conducted under the direction of non-medical individuals. Much depends, also, on the continued hearty support of the various organizations and individuals who operate in the laboratory field. That this is already assured is indicated by the promptness with which laboratories are filling out and returning the form that has recently been mailed out by the Council on Medical Education and Hospitals for a complete and needed resurvey of laboratory service. The resulting data from this survey will be published for the benefit of all. Of course, any laboratories that are not yet on the list will be promptly considered for approval, if they express such a desire.

NEWS ITEMS

HARVARD MEDICAL SCHOOL NEWS—APPOINTMENTS—The following appointments were recently made at the Harvard Medical School: *For one year from September 1, 1927*—Howard Burnham Sprague, M.D., Assistant in Medicine; Randall Clifford, Assistant in Medicine. *From January 1—September 1, 1928*—Walter Swan Burrage, Research Fellow in Medicine. *From February 1—September 1, 1928*—Charles Whittier Young, Associate in Comparative Pathology; Emil Bogen, Research Fellow in Physiology. *From March 1—September 1, 1928*—Frank Bostrom, Teaching Fellow in Orthopaedic Surgery.

TUITION IN THE YALE MEDICAL SCHOOL WILL BE RAISED—It is reported that the tuition fee in the Yale Medical School will be raised to five hundred dollars per year; but students who enroll before June 30th of this year will be accepted at the present rate of $300.

THE APPOINTMENT OF DR. E. J. DENNING—Dr. Edward J. Denning, 45 Bay State Road, Boston, has been appointed Chief of the Medical Department at the Carney Hospital.

Dr. Denning was born in South Boston, was graduated from the Lawrence Grammar School, 1893, from Boston Latin School, 1898, from Harvard, A. B. Cum Laude, 1901, and from Harvard Medical School with an M. D. Cum Laude in 1905.

Dr. Denning is exceptionally well qualified by experience and by training for the position of Chief of the Medical Department, for since 1917 he has been officially connected with the Carney Hospital, in which he attracted the attention of the Hospital authorities, first in the Out-Patient Department and later as Assistant Physician. He has been Assistant Professor of the Theory and Practice of Medicine in Tufts College since 1924.

Dr. Denning will hold at Carney a position in the Medical Department similar to that held by Dr. F. B. Lund in Surgery, by Dr. W. Russell MacAusland in Orthopedics, and Dr. F. W. Johnson in Gynaecology.

INFANTS AND THE AGED ARE THE SAME TO SMALLPOX—Smallpox is no respecter of persons with reference to age, condition or station in life, wealth or any other factor aside from immunity due to a previous attack of the disease or to vaccination. That the disease may occur at any age is illustrated by two recent cases in Middletown. One is a baby born while the mother was in the beginning stage of smallpox, and the baby broke out with the disease by the time it was a week old. The other is a man who had smallpox at the age of seventy-one years.

This seventy-one-year-old patient had never been vaccinated. His daughter and son-in-law, with whom he lived in Middletown, were vaccinated during the recent vaccination campaign. Someone told the family that people do not have smallpox after they reach the age of fifty-five or sixty. This was a mere rumor and not a medical opinion. However, the people believed it and the elderly gentleman was not vaccinated. Later he came down with smallpox and thus demonstrated that the disease may attack persons late in life.

The point may well be emphasized that no age is exempt from smallpox. The disease attacks people of all ages from early infancy to advanced age. The only way a person of any age can be assured of protection against smallpox is to keep himself immune through vaccination.

Age distribution and vaccination history of smallpox cases in Connecticut, January 1 to February 14, 1928:

Age Groups	Cases
0-4	6
5-9	13
10-14	24
15-19	24
20-24	20
25-29	11
30-34	10
35-39	10
40-44	1
45-49	6
50 and over	4
Total	129
No record	6
	135
Vaccination history of cases:	
Never vaccinated	123
Vaccinated*	4
Questionable	2
No history filed yet	4
Not stated	2
Total	135

*The 4 cases that were vaccinated were vaccinated approximately 22, 42, 43 and 44 years previous to having smallpox.—*Bulletin of the Connecticut State Department of Health.*

QUARANTINE AGAINST RABIES—Fall River has arranged to guard the approaches to the city so as to prevent stray dogs from entering.

Several cases of rabies have been found in dogs in this section of the state, particularly in Somerset and Swansea.

Three persons in Fall River are under treatment to prevent the development of rabies after having been bitten by dogs.

Dr. Ernest M. Morris, Health Commissioner of the city, is taking all possible precautions to protect the people of the city.

Sensational accounts of wild dogs in wooded areas in this part of the state have been published. The police have killed seventeen such dogs according to newspaper accounts.

NOTICES

A WARNING TO MEMBERS OF THE MASSACHUSETTS MEDICAL SOCIETY

Information has again reached the JOURNAL office that an unauthorized solicitor is at work attempting to collect dues from Massachusetts Medical Society members. He also claims that he is authorized to collect subscriptions for the JOURNAL, which statement is false.

Notices, warning members that unauthorized solicitors are at work, have previously appeared in the JOURNAL, but have evidently failed to attract the attention of all the members.

There is no solicitor authorized to collect subscriptions for the JOURNAL nor is anyone sent from this office to collect dues of Massachusetts Medical Society members. Dues are payable to the District Treasurers and State Treasurer only.

CORRECTION

The article "The Early Diagnosis and Prevalence of Non-Paralytic Anterior Poliomyelitis" by Dr. Eliot H. Luther which appeared in our issue of December 22, page 1175, carried an incorrect title. It is correct as it appears here.

ANNUAL GRADUATE FORTNIGHT OF THE NEW YORK ACADEMY OF MEDICINE

An unusual opportunity to study the degenerative diseases of old age will be given by The New York Academy of Medicine October 1 to 13, 1928, by means of a program of lectures, clinics and courses in hospitals and teaching institutions.

This is to be the first "Annual Graduate Fortnight" of the Academy, inaugurating a form of graduate medical education novel in this country. In October of each year a problem of medicine or surgery of outstanding importance and interest to practising physicians will be selected. The topic for 1928 is described as "The Problem of Aging and Diseases of Old Age."

Not only will the diseases and management of old age be discussed, but attention is to be directed toward the prevention of premature and postponing of normal aging. Diseases of the heart and affections of blood pressure and kidneys will be studied under the guidance of men of national and international reputation.

By concentrating all the available knowledge and experience on a single problem each year it is believed the greatest benefit to general practitioners, and specialists as well, can be secured. The coming sessions will devote considerable time to pointing out the effect of wrong modes of living. Aging, as it relates to health insurance and to economic and industrial problems, is to be included in the curriculum.

No fees are to be charged for the Fortnight. It is not expected that every physician will feel disposed to attend all of what will be a program of long duration each day. Special courses to be arranged, in conjunction with the sessions by medical schools and teaching hospitals, may, however, carry a nominal charge for those who attend them.

Sessions are scheduled for morning, afternoon and evening, with suitable arrangements for physicians from out of the city to have supper served at the Academy between the afternoon and evening sessions.

REPORTS AND NOTICES OF MEETINGS

MEETING OF THE HARVARD MEDICAL SOCIETY

The regular meeting of the Harvard Medical Society was held in the Peter Bent Brigham Hospital on Tuesday evening, January 24, 1928, at 8:15 o'clock. After the presentation of two cases, Dr. A. V. Bock, Ass't. Professor of Medicine at the Harvard Medical School, and chairman of the meeting, introduced Dr. Herman Blumgart who presented two papers. The first paper was entitled, "The Effect of Pituitrin applied intranasally in patients with diabetes insipidus." The second concerned itself with the velocity of blood flow in circulatory failure, in anemia, and in pulmonary emphysema.

The first case was presented by Dr. Sagebiel. The patient, a married American garage-worker of 40 years, came into the hospital on the 17th of January, 1928, giving a history of abdominal pain and nausea. Up until entry he had been quite well except for measles as a child and typhoid fever twenty-six years ago. On the second of January he had experienced a sharp pain in the epigastrium which continued even after induced vomiting and a cathartic. The pain went down to the right lower quadrant where it became of a sharp character. He applied ice-bags and took more cathartics with no relief. The pain became intermittent during the next two weeks and moved up opposite the umbilicus on the right side with no radiation.

On admission to the hospital his temperature was 102° and his white count 17,000. Physical examination showed nothing outside the abdomen except a few dental caries and cervical and inguinal adenopathy. Palpation of the abdomen showed a slight fulness in the right upper quadrant and an indefinite mass. A walled off abscess from a ruptured appendix was diagnosed and operation was done. Upon incision of the peritoneum a large amount of foul-smelling pus welled up. Further exploration brought to view a typical gall-stone. Convalescence was uneventful with draining every day. The white count went down and there was no pain.

The second case was presented by Dr. John Fulton. The patient was an American boy of six, the first child and a difficult instrumental case with forceps resulted in laceration in the back of the head. He has vomited for four years, and last September after an attack of whooping cough the vomiting became projectile in character and he complained of pain in the head. In December he developed an internal squint with evident paralysis of the left sixth nerve. He became unsteady on his feet and drowsy and was brought into the hospital.

Examination showed extremely choked disc with moderate diminution of visual acuity as well as could be determined. A small defect in the suboccipital region gave evidence of pulsating crepitation and on auscultation a loud, high-pitched systolic bruit was heard. Diagnosis of haemangioma, rare in children, or venous stasis with increased intracranial pressure was made. 15-20 cc of a 50% solution of magnesium sulphate was given by mouth each morning. The atoxia disappeared, the bruit was less loud, his choking was reduced from 6 D to 2½ D, but the external rectus paralysis continued. The sutures, palpably separated on entry, remained so being due to a congenital defect or to erosion from

increased intracranial pressure. No decision as to further treatment had been made.

In his first paper Dr. Blumgart presented a series of eight cases of diabetes insipidus, all with a different etiology. Posterior lobe extract of the hypophysis was used as subcutaneous injections, as nasal sprays, and also applied with cotton pledgets soaked in it and allowed to remain in the nose. Graphs comparing the fluid intake and the urine output show a great variance between different patients. Two conclusions may be drawn. The results obtained by nasal spray, by the pledget method, or by intramuscular injections are on the average the same. Secondly, pituitrin is apparently absorbed best when applied high up in the nasopharynx in the region of the olfactory nerve; thus, if the drug is not applied to portions of the mucous membrane, it is relatively ineffective.

In introducing his second paper Dr. Blumgart summed up the history of measuring the velocity of blood flow. Potassium cyanide has been injected and then blood from different points was tested by the Prussian Blue reaction. Hypotonic salt solutions have also been used, and recently fluorescin has been injected and samples of blood taken at five second intervals from some distant point. The difficulties with these methods were that blood could only be taken from the cubital vein, a steady flow of blood was necessary, and then of course, the clogging of the needle and possible thrombus formation.

The principle of the old method, that of injecting a substance and measuring the time it took to travel to a definite point, is the same for the new method. Two-tenths of a cubic centimeter of Radium C or active deposit of radium is injected. The gamma rays and beta particles given out are capable of penetrating ordinary substances, but are absorbed by lead. Thus, a lead plate with a hole in it is put over the auricle; when the radium is injected into the cubital vein, it travels to the auricle and is absorbed by the lead except that with the hole at the outer side of which a sensitizer is put to record on a moving drum the moment it is stimulated by the radioactive substance. The advantage of this method is that it does away with all the old difficulties and in addition the radium has no toxic action up to three hundred milligrams, it decays in three hours to inactive radium D, and the blood and urine show no untoward subjective or objective effects. By this method the time of blood flow from elbow to heart was found to be from two to fourteen seconds; the pulmonary circulation time which bears no relation to the height and weight of the individual was on the average eleven seconds.

It was definitely shown that there is a relation between blood velocity and pathological processes. In rheumatic heart disease with a slowing of the heart the pulmonary circulation time becomes sixty to seventy seconds. Patients with valvular disease, syphilitic hearts, and hypertension were examined. In no case was there increased velocity. A relationship between velocity of blood flow and peripheral edema was readily shown, and while the increased velocity may not be the primary cause of the edema, it certainly is a contributing factor to the result. In pulmonary emphysema the velocity through the lungs was found to be normal or slightly above the normal average with the vital capacity diminished and the venous pressure normal. This result may be due to myocardial insufficiency.

The blood velocity was also studied after digitalisation. Recent findings at Vanderbilt University have shown that there is a lessened output of the heart under digitalis in unanaesthetized animals. By the study of blood velocity it was found that a dramatic quickening of the blood flow occurred after digitalis, this being sufficient to overbalance any effect digitalis might have in lessening the blood output.

In anemia the problem is to decide whether the corpuscles make more trips or take up more oxygen to compensate for the deficiency. In hyperthyroidism the blood flow through the lungs was very fast, while in myxedema the slower blood flow was increased by thyroid gland treatment.

The paper was extremely interesting and showed the possibilties of such a method as of diagnostic importance to the clinician.

ANNUAL MEETING OF THE BOSTON HEALTH LEAGUE

The Annual Dinner Meeting of the Boston Health League, a federation of thirty-one agencies engaged in the promotion of public health work in Boston, was held at the Hotel Kenmore, 496 Commonwealth Avenue, on Wednesday, February 15, at 7 P. M.

Dr. G. C. Shattuck, Assistant Professor of Tropical Medicine at Harvard, delivered an illustrated lecture on "Scenes in Tropical Africa," from which place he has recently returned after an intensive study of tropical diseases.

Other speakers were:—Dr. John W. Bartol, President of the Boston Health League; Dr. George H. Bigelow, Commissioner of Public Health for the Commonwealth of Massachusetts; Dr. Alexander Begg, Dean of the School of Medicine of Boston University and Chairman of the Health Committee of the Chamber of Commerce; Dr. Charles F. Wilinsky, Deputy Commissioner of Child Hygiene of the Boston Health Department and Executive Secretary of the Boston Health League.

The following officers were elected for the coming year:—Honorary President, Dr. Francis X. Mahoney; President, Dr. John W. Bartol; Vice-President, Rev. George P. O'Conor; Treasurer, Dr. Richard G. Wadsworth; Secretary, Dr. Merrill E. Champion.

The Health League has been an important factor in the past six years in co-ordinating the work of the official and voluntary health agencies. It has endeavored to promote efficiency and economy by harmonizing the work in this field.

The following agencies now comprise the membership of the League:—Beth Israel Hospital Association; Boston City Hospital, Department of Social Work; Boston Dispensary; Boston Floating Hospital; Boston Health Department; Boston League of Women Voters; Boston Metropolitan Chapter, American Red Cross; Boston Public Schools, Department of School Hygiene; Boston Tuberculosis Association; Catholic Charitable Bureau; Children's Hospital, Social Service Department; Community Health Association; Ellis Memorial and Eldredge House, Inc.; Forsyth Dental Infirmary for Children; Hawthorne Club; Health Exhibit Committee of Boston; Household Nursing Association; Jewish Maternity Clinic Association; Lincoln House Association; Massachusetts Department of Public Health; Massachusetts General Hospital, Social Service Department; Massachusetts Homeopathic Hospital; Maverick Dispensary; Medical Mission Dispensary; Neighborhood Kitchen; New England Dairy and Food Council; Nutrition Clinics, Inc.; Peter Bent Brigham Hospital, Social Service Department; South End Diet Kitchen; Vincent Memorial Hospital; Women's Municipal League; Massachusetts Society for Mental Hygiene.

MEETING OF THE NEW ENGLAND HEART ASSOCIATION

The New England Heart Association in conjunction with the American Heart Association held a meeting on February 6, 1928, at John Ware Hall, Boston Medical Library. Dr. James B. Herrick, President of the Association, presided. The vice-president, Dr. W. H. Robey, gave the opening address in

which he outlined the functions of the American Heart Association as of three kinds: to prevent heart disease, to better the treatment of it in convalescence, and to educate the laity and the medical profession about the various cardiac conditions. After the treasurer's report by Dr. Paul D. White, a report of the year's activities by Dr. Haven Emerson, members of the Advisory Council and Board of Directors were nominated and elected.

The first paper of the evening was presented by Dr. W. Irving Clark of Worcester, Mass., who spoke on "Effects of Accidents on Cardiac Employees." Two questions, Dr. Clark pointed out, come to the mind of the industrial surgeon in a cardiac case. Is the patient's heart condition due to the accident? Does the accident affect the heart function? To answer the first question, forty-five definitely diagnosed cardiac cases were followed over a period of seventeen years. Record was kept of all accidents whether while in the factory or outside. In no case was it found that injury such as fractures and brain concussions lowered the man's capacity for work. An added mild infection also had no effect. To answer the second question eighteen large factories were sent questionnaires. Of these, three answered that in their experience there is sometimes a connection between accidents and increased heart trouble. The records of the Worcester City Hospital were searched and the final conclusions are that as a general rule the diseased heart is unaffected by accident, and that there is no accident which may cause an exacerbation in the cardiac patient.

The second paper of the evening, entitled "Accidents and Heart Disease from the Court's Point of View," was given by Commissioner Frank J. Donahue of the Industrial Accident Board of the Commonwealth of Massachusetts. Mr. Donahue defined the Board of Compensation as a functioning board acting both as jury and judge. One member may render a decision, but the workingman has a chance to appeal to the whole board. In most States the employee may obtain compensation for anything which occurs during his employment, while in others only for actual accident. The rule for the court is that there should be compensation for injury to the employee and not for pre-existing disease; this rule is not strictly adhered to. The final conclusion of the court is that pre-existing disease attaining its end or more acute condition in employment is not a personal injury unless it is accelerated by the employment and life shortened. After citing some cases in his experience, Mr. Donahue concluded that severe accidents, especially in older people do accelerate heart disease and perhaps cause death.

Mr. Gay Gleason presented the third paper on "Accidents and Heart Disease from the Insurance Company's Point of View." The question of causation is the important thing from this angle. It is necessary to differentiate whether the cause was the accident or the pre-existing disease and how much of the result was due to each cause. He also concluded from cases in his experience that injuries aggravate heart trouble.

The meeting was of interest in that it showed the cardiologist how other people consider his work.

MEETING OF THE EAST BOSTON MEDICAL SOCIETY

The annual meeting of the East Boston Medical Society was held at the Parker House in Boston February 23rd.

After the dinner Dr. George B. Magrath gave an interesting address, in which he recounted many interesting experiences in connection with his work as Medical Examiner.

Major-General Edward L. Logan told of interesting features of the convention in Paris last summer of the American Legion.

Dr. W. H. Ensworth acted as toastmaster.

The members of this Society include physicians in East Boston and Winthrop.

The officers elected for the ensuing year are as follows: President, Edward D. Hartnett, M. D.; Secretary, Louis Salerno, M. D., and, Treasurer, Alexander L. McLaren, M. D.

FIFTEENTH ANNUAL MEETING OF THE MEMBERS OF THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER, MARCH 3, 1928

The annual meeting of the members of the Society is held on the first Saturday in March. In 1928 this falls on March 3rd.

Plans are being made to have the forthcoming meeting the most interesting and important annual meeting ever held by the Society.

There will be business meetings of the Executive Committee and Board of Directors at the Society's headquarters, 25 West 43rd Street, and a luncheon meeting for members at the Hotel Biltmore, at 1 o'clock. At the luncheon meeting there will be a short business session and a general discussion of the Society's work following two short addresses on the public health and medical aspects of the work. In the morning Dr. Francis Carter Wood, Director of the Institute of Cancer Research at Columbia University, will give a demonstration of modern cancer research at the Crocker Laboratory, Amsterdam Avenue and 116th Street, beginning at 10:30 o'clock. All are invited to attend this demonstration.

The short business session at the luncheon will be devoted to the annual election of the Advisory Council of the Society, the officers of the Council and the election of the Board of Directors. There will be a brief report of the past year's work by the Managing Director and a report of the year's receipts and expenditures presented by the Board of Directors. The officers of the Society, that is, the new President, Vice-President, Secretary and Treasurer and the members of the new Executive Committee will, according to the Society's By-Laws, be elected by the Board of Directors upon a later occasion.

The luncheon will be presided over by President Howard Canning Taylor. The first of the two addresses will be "The Function of Health Departments in the Control of Cancer" and will be delivered by Henry Vaughan, Health Commissioner of Detroit and Past President of the American Public Health Association. Dr. Vaughan is one of the best known authorities on public health administration in the United States and a member of the Special Committee of Cancer Control of the American Public Health Association, whose report on "What Official Public Health Administrators Should Do About Cancer," was adopted by the American Public Health Association at its annual meeting at Cincinnati, October 17-21, last.

The second address, entitled "What the Medical Profession Should Do About Cancer," will be delivered by Jonathan M. Wainwright, M.D., Chairman of the Pennsylvania Cancer Commission and a member of the Advisory Council of the American Society for the Control of Cancer. The Cancer Commission of Pennsylvania is older than the American Society for the Control of Cancer and has a commendable record of achievement.

MASSACHUSETTS GENERAL HOSPITAL

STAFF MEETING, MOSELEY MEMORIAL BUILDING, THURSDAY, MARCH 8, 1928, AT 8:15 P. M.

(1) Some observations on a group of severely burned cases, with special reference to certain blood studies. Dr. Henry H. Faxon, East Surgical Resident.

(2) The Experimental Production of Abscess of the Lung. Dr. Elliott C. Cutler of Cleveland, Pro-

fessor of Surgery, Western Reserve University School of Medicine, Chief Surgeon Lakeside Hospital.

Physicians, students and nurses are cordially invited to attend.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

A meeting for Medical Improvement will be held on Thursday, March 1, 1928, at 12 o'clock noon, at the Norfolk County Hospital.

Mr. Frank Kiernan, Secretary of the Massachusetts Tuberculosis League, will show a moving picture, "The Doctor Decides."

Dr. Pillsbury will show another moving picture depicting the work of the Norfolk County Health Camp.

D. A. BRUCE, M.D., *President.*
N. R. PILLSBURY, M.D., *Secretary.*

GREATER BOSTON MEDICAL SOCIETY

A regular meeting of the Society will be held on Tuesday, March 6, 1928, at 8:15 P. M., at the Boston Medical Library.

Program: The Teachings of Freud.

Speakers: Dr. Isador Coriat, Dr. Edward Wyllys Taylor, Dr. Abraham Myerson.

Discussion.

All those who are interested are cordially invited.

Refreshments.

ROBERT SLATER, M.D., *Secretary,*
68 Bay State Road, Boston, Mass.

SOCIETY MEETINGS

March 3—Annual meeting of the American Society for the Control of Cancer. Detailed notice appears on page 1535, issue of February 9.

March 6—Greater Boston Medical Society meeting. Detailed notice appears above.

March 8—Massachusetts General Hospital Staff Clinical Meeting. Complete notice appears on page 114 of this issue.

March 13, April 10—Massachusetts Dietetic Association. For complete notice see page 1535, issue of February 9.

June 18-22—Convention of the Catholic Hospital Association. Complete notice appears on page 1597, issue of February 16.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

May 2, 1928 (Wednesday)—Annual meeting at Haverhill, 12:30 P. M., at the Haverhill Country Club, Brickett Hill, Gile Street, Haverhill.

May 3, 1928 (Thursday)—Censors meet for examination of candidates at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M. Candidates should apply to the Secretary, J. Forrest Burnham, M.D., 567 Haverhill Street, Lawrence, at least one week prior.

Essex South District Medical Society

March 7 (Wednesday)—Lynn Hospital. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. Henry R. Viets, "The Acute Infections of the Nervous System," with lantern slides and moving pictures.

Discussion by Drs. W. V. McDermott of Salem and J. W. Trask of Lynn, 10 minutes each, and from the floor.

April 11 (Wednesday)—Essex Sanatorium, Middleton. Clinic at 5 P. M. Dinner at 7 P. M.

Dr. Raymond S. Titus, "Obstetrical Emergencies."

Discussion by Drs. J. J. Egan of Gloucester and A. T. Hawes of Lynn, 10 minutes each, and from the floor.

May 3 (Thursday)—Censors meet at Salem Hospital for the examination of candidates at 3:30 P. M. Candidates should apply to the Secretary, Dr. R. E. Stone, Beverly, at least one week prior.

May 8 (Tuesday)—Annual meeting. Detailed notice appears on page 1437, issue of January 26.

Norfolk District Medical Society

March 27—Meeting at the Norwood Hospital. Presentation of paper or cases from members of the District.

May 3—Censors' meeting. Roxbury Masonic Temple, 4 P. M. Applications will be mailed by the Secretary upon request.

May 8—Annual meeting. Details to be announced.

Norfolk South District Medical Society

March 1—Norfolk South District Medical Society meeting. Complete notice appears elsewhere on this page.

Suffolk District Medical Society

Combined meetings of the Suffolk District Medical Society and the Boston Medical Library will be held at the Boston Medical Library, 8 The Fenway, at 8:15 P. M., as follows:

March 28—Medical Section. "The Use and Misuse of Vaccines." Dr. Hans Zinsser, Dr. Francis M. Rackemann, Dr. Charles H. Lawrence.

April 25—Annual meeting. Election of officers. Paper of the evening to be announced later.

The medical profession is cordially invited to attend these meetings.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

BOOK REVIEWS

Practice of Urology and Syphilology. By CHARLES H. CHETWOOD, M.D., LL.D., F.A.C.S. Published by William Wood & Company, New York. 879 pages. Price $9.00.

This is the fourth edition of Dr. Chetwood's text book on urology and brings methods of diagnosis and treatment up to date. The use of the newer drug preparations, such as hexylresorcinol, acriflavine and mercurochrome, are discussed. Cystoscopic and urethroscopic methods are carefully described, together with advances in operative technique. Attention is given to the application of regional anaesthesia to urology. The addition of from one hundred to one hundred and fifty new cuts makes this edition amply illustrated. The last hundred pages are devoted to syphilis.

This book gives an excellent survey of urology and is recommended as a text for students.

Healthy Growth. A Study of the Relation Between the Mental and Physical Development of Adolescent Boys in a Public Day School. By ALFRED A. MUMFORD, M.D. Published by Humphrey Milford, Oxford University Press, 1927. Pp. 348. Illus.

In this volume the experience of the author as medical officer of the Manchester Grammar School for many years is drawn upon. He has attempted, with a very considerable degree of success, to establish standards for adolescent boys by which physical and mental adequacy can be tested.

It is, of course, out of the question to take up in detail the many methods of measurement. It is, however, obvious that this volume is the most complete study of the problem at present available. It is clearly written and adequately illustrated. In general, the author sticks to his data with commendable energy. His theories as to what education is for and how it should be conducted are definite and clearly expressed, but it is easy to separate facts from inferences and ideas. The volume should be of very real value to school physicians.

Textbook of Bacteriology and Its Applications. CURTIS N. HILLIARD. Pp. 329. Ginn & Company, Boston. 1928.

This small handbook of bacteriology endeavors to cover the fundamental aspects of the science and its more important practical applications from the point of view of a college course in bacteriology, embracing not only that portion of bacteriology which falls within the field of medicine but, in addition, its applications to household economics.

Two interesting chapters are those on food preservation. An interesting feature is an appendix giving important dates in bacteriology, including agricultural bacteriology. It is to be regretted that in

the colored frontispiece the Gram-negative gonococcus and Gram-positive pneumococcus are apparently identical in color.

This book, of course, being primarily for the special use of college students, is better adapted for them and for nurses than for the practitioner or laboratory worker.

Poliomyelitis, With Especial Reference to the Treatment. (Illustrated with 173 engravings.) By W. RUSSELL MACAUSLAND, M.D. Boston, Mass. Lea & Febiger—Philadelphia, Pa. $5.50 net.

The treatment of poliomyelitis, as the title of this work states, constitutes its especial interest. Indeed one hundred and twenty-four of its pages are devoted to the disease process known as poliomyelitis, and the remaining two hundred and sixty-two pages deal with methods of therapy. In consequence the book is intended for those who take an active interest in the details of treatment, not for those who have an especial interest in the epidemiology, pathology, and diagnosis of the disease.

One is always interested in discovering the reasons which have prompted an author to write a book. In this instance the preface gives the need for a comprehensive account of the disease poliomyelitis as the chief reason. Another reason is the desire to set up standards of treatment, and another, the necessity of indicating the principles upon which treatment is based. The author wishes to make these things clear and readily understandable. One feels that he has worthy and warrantable reasons for writing, and that he is to be congratulated on the simple manner in which he has proceeded to write his essay on poliomyelitis, undoubtedly a most difficult and harassing task. Difficult because of the shifting sands upon which our knowledge of the disease has its slight foothold. Harassing because the methods of treatment are constantly changing. Nowhere in medicine is there less agreement as to the permanency of any clinical procedure than in the treatment of poliomyelitis.

As to the disease process itself, the author says in his preface that in spite of the fact that there has been no serious epidemic since 1916, nevertheless, and in truth, an extensive outbreak may occur at any time, a prediction and prophecy of sinister moment, because of the desolation caused by this disease. A community in the presence of a serious outbreak of poliomyelitis presents all the evidences of panic in its worst form. What to do, how to do it, and when to do it, are questions that the medical practitioners of the community must answer as best they may. One feels that the rather scanty knowledge which we possess is well enough presented in this book; indeed its contents on the subjects etiology, bacteriology, pathology, and diagnosis should be the common knowledge of all practitioners of medicine. The author presents what is really known in concise and correct form. In so far as it goes, it is good, but in so far as it is lacking in specific knowledge it is more instructive. In other words, it is of value to realize how little is really known about the disease process called poliomyelitis. The consummation devoutly to be prayed for is the discovery of enough knowledge about this disease to make the long exposition of methods of treatment of the paralysis unnecessary. This has happened with other disease processes. One is not finding fault with the author, but trying only to indicate his difficulties in writing a book on a subject the end of which is not yet to be estimated. Consequently the book contains that which should be read and known, negative as it is, by the general medical public and laity.

When it comes to treatment, that part which especially appeals to the author, we see set down explicitly most of the well-known facts, and well set down at that. This part of the book concerns the orthopedic surgeon chiefly, and it is written for him and for the student in surgery who wishes to understand the technique of surgery as applied to the end results of this disease process. Of course there are slips of one kind and another, as for instance on page 122 the author states, "After six months, there is little return of muscle power and future disability may be fairly well estimated," and on the next page he says, "Early neglected cases should not be disregarded, for they are capable of much improvement, even after years of disability." On the face of it these two statements seem to disagree, but in reality the fact they indicate is that the author has little reason for an arbitrary six months, unless he desires to have a clear conscience in recommending early surgical interference. Perhaps this is as it should be, or rather as it is, because we know so little really about the disease. Of course we have to treat it as best we can, and MacAusland's book tells much of how this should be done. One hesitates to agree that treatment can or should be standardized. Certainly, certain things should be done and universally done in the treatment of this disease, especially in its acute stages. One cannot agree entirely in rules of thumb, nor in the belief that because a certain operative procedure has a present-day vogue, it will be used at all in five years' time,—the history of too many operative measures proves this to be true. A flaw may be picked in the frequent recommendation of manipulation as a valuable procedure. One feels that the manipulative procedures recommended will not lead to the results implied, indeed some harm may result from their use.

On the whole, it is a well written book. It sets forth certain facts in admirable fashion, and anyone who attempts to write a book on this subject will realize that the author has worked hard and long, and has produced a worthy volume. He is not to be blamed with our lack of knowledge. He has made excellent use of that which we have at our disposal.

Troubles We Don't Talk About. By J. F. MONTAGUE, M.D. Pp. 241. J. B. Lippincott Company.

The opening sentence of the preface is, "Here is a book such as has never before been published in the interest of public health". From the way in which it is written it is rather difficult to see how it could be any great aid to public health. The book devotes itself to the discussion of rectal pathology. There are many worthwhile suggestions, but the whole book is such a glorification of the specialist in rectal diseases and so venomously critical of the general practitioner that it is a great pity such a book should be designed for lay readers. It is difficult to imagine any competent physician making this statement found on page twenty-three, "Examination by means of a gloved finger is foolishly insufficient".

The writer is an ardent advocate of the injection treatment of hemorrhoids and cites with great gusto the evil results of other methods of treatment. One of the most cruel and grossly inaccurate statements in the book is this found on page sixty-four, "For even in the very worst form of cancer there is always a time during the first few months of its existence where cure is possible, if proper treatment be started". It may be that the writer feels that he is doing good by making such statements as this, but either his ignorance is colossal or he is deliberately attempting to deceive. Again, on page sixty-six we find a second indictment of rectal examination, "Mere examination of the rectum with a gloved finger is silly—it gives but little information and being incomplete, is worse than no examination at all".

It is too bad that a book which might have been worthwhile is spoiled by inaccuracies and obviously exhibited prejudices.